TRACKTION

MUSIC PRODUCTION SOFTWARE

REFERENCE MANUAL

www.tracktion.com

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Table of Contents

Introduction

1 : Navigating This Manual 5
2 : Digital Audio, Some Key Concepts 6
3 : MIDI Basics....9

Chapter 1: The Projects Page

1.1 : An Overview 12
1.2 : The Projects List, And Project Properties 16
1.3 : The Items List 19
1.4 : The Control Panel....20
1.5 : The Clipboard Panel 23
1.6 : The Search Tool....24
1.7 : Template Projects 25
1.8 : Edit Properties 26
1.9 : Audio Item Properties 28
1.10 : MIDI Item Properties....32
1.11 : Movie Item Properties....33

Chapter 2: The Settings Page

2.1 : Audio I/O....35
2.2 : MIDI I/O 41
2.3 : User Interface 44
2.4 : Plug-Ins....49
2.5 : Loop Settings....50
2.6 : File Settings 52
2.7 : Key-Mappings....53
2.8 : Control Surfaces 54

Chapter 3: The Edit Page

3.1 : An Overview 60
3.2 : The Quick Find Panel 64
3.3 : Working With Tracks....68
3.4 : The Filter Section....76
3.5 : The Control Section 88
3.6 : The Transport Section 91

Chapter 4: Working With Clips

4.1 : An Overview Clips 96
4.2 : Working With Clips 98
4.3 : MIDI and MIDI Clips....101
4.4 : The MIDI Editor....110
4.5 : Quantising And Groove Templates 115
4.6 : Audio Clips....117
4.7 : Looping Clips 122

Chapter 5: Recording

5.1 : Assigning And Preparing An Audio Input 127
5.2 : Assigning And Preparing A MIDI Input 129
5.3 : The Recording Modes Explained 130

Chapter 6: The Time-line, Synchronisation, And Snap To Grid

6.1 : The Time-line, And Snap-To-Grid Quantising 133
6.2 : The Global Track, And Setting Tempos, Keys, And Time Signatures 134
6.3 : The Markers Track, And Markers 138
6.4 : The Timecode Button Options 140
6.5 : The Click Track, And The Click Track Button Options 141
6.6 : Synchronising Tracktion With External MIDI Devices 142
6.7 : The Movie Window, And The Movie Button Options 144

Chapter 7: Mixing And Mix Automation

7.1 : An Overview Of Mixing With Tracktion 145
7.2 : Sub-mixes And Effects Sends 145
7.3 : Mix Automation 147
7.4 : Using Control Surfaces 156

Chapter 8: Importing, Exporting, Freezing, And Rendering

8.1 : Importing And Exporting Projects 172
8.2 : Exporting Audio 175
8.3 : Exporting MIDI 178
8.4 : Rendering Tracks And Freezing Tracks 179
8.5 : The Import Button Options 181
8.6 : The Export Button Options 182

Chapter 9: Rack Filters

9.1 : What Are Rack Filters? 183
9.2 : Working With Rack Filters 184
9.3 : How To Build Rack Filters 188
9.4 : Racks, Tracks, Inputs, And Outputs 190
9.5 : Working With Multiple Output VSTis 192

Appendix A: Tranzport Button-Function Mapping

A : Tranzport Button Mapping Table… 194

Introduction

Tracktion originated in the mind of Julian Storer, an English programmer with a love of audio. Stateside Tracktioneers* will notice a distinctly British flavor to the user interface. To help you understand Tracktion better, the manual was written with a British accent (thank you to Adam Starkey), and many cups of tea. So sit back, imagine yourself watching the sunrise over Stonehenge (or sitting in an English pub if you prefer), and enjoy Tracktion!

Visit our website www.tracktion.com to download, purchase and register your copy of Tracktion.

Introduction 1: Navigating This Manual

Hello, and welcome to Tracktion! If you have not already read through the Quick-Start Guide, may we suggest that you start there. The Quick-Start Guide is specifically designed to get you up and writing music with your new Tracktion software as quickly as possible.

This reference manual will hopefully serve as both user guide and formal reference for all of Tracktion's options and features. To help you navigate, each chapter covers a single subject, or section, of Tracktion. These chapters are then broken down into easy to manage sections. Where possible, chapters will begin with a hands-on look at the subject matter, including best practice suggestions, and walk-throughs for common tasks. Detailed reference sections will make up the remainder of the chapter.

That said, Tracktion has been designed with the specific goal of being as easy to use and accessible to you, the user, as possible. As such, while you are free to read this reference manual from cover to cover, we are confident that you will find Tracktion so easy to learn that you will only need to turn to this manual when you have specific questions.

Conventions Used In This Manual

Keyboard shortcuts are referenced throughout this manual. They are signified by bold typeface, e.g., **F1**. Where multiple keys are used to create a shortcut, the + symbol is without bold typefacing, to signify that the keys should be pressed together, e.g., **SHIFT**+**S**.

The following pages assume you have a two-button mouse. For Mac users with a single-button mouse, the right-click options are available by holding down the **CTRL** key whilst clicking. If you have a single-button mouse, you will find Tracktion far faster to use with a two-button mouse. Such mice are inexpensive and can be found at most good computer or office supply stores.

Introduction 2: Digital Audio, Some Key Concepts

Before we look at working with and recording audio in Tracktion, it may be helpful to look at a few of the fundamentals of digital audio. If you have only recorded audio in analogue form before now, there are a few rules you will need to unlearn, as well as few principles you may find helpful to keep in mind. Of course, if you are comfortable working with digital audio already, feel free to dive right into this reference manual.

Let's get the most important rule of working with digital audio out of the way first, because if there is one thing you should take away from the short primer, it's this:

You may be used to recording with analogue hardware, and if so you have almost certainly, at some point, made recordings where the level meters are bouncing into the red areas. This is a habit you need to break when working with digital. Whilst there are some practical and artistic benefits to recording a little hot with analogue recorders, when it comes to recording digitally, the level meters should be kept below the red line at all times. Digital recorders are very unforgiving with audio that goes beyond the maximum level, and such peaks will result in a most unpleasant kind of distortion. Aim to get your input levels as high as possible without ever hitting the 0 dB mark, and if unsure, err on the side of caution. Most modern converters work at 24-bit, which means you can leave a clear 3 dB of headroom without in any way compromising on noise floor.

Figure I.2.1

Figure I.2.1 shows the waveform of a simple percussive pattern. The waveform at the top is the audio belonging to the left-hand stereo channel, while the waveform at the bottom belongs to the right-hand channel. This image is basically a graph of amplitude and time, where amplitude is measured on the vertical axis, and time is measured along the horizontal axis. If you know that this audio file contains a single bar of a drum pattern, you can probably see that each of the high peaks represents an individual percussive hit. Look closely at each of the peaks above and you can see that they all tend to reach a peak amplitude very quickly. Once at their peak amplitude, they decay over a short period of time, and finally fade to silence over a slightly longer period of time. If you think about the sound that percussive instruments such as snares make, you should be able to see the correlation between the sound described by the image, and the sound of an actual drum part.

That digital audio is a measurement of amplitude over time may not come as a surprise to you. After all, that basically describes analogue recordings, too. Where digital does differ from analogue though, is in how the amplitude and time measurements are made.

Sample Resolution (Bit Depth)

Although perhaps a strange analogy, a thermometer is a good model for describing sample resolution. Imagine that you have a thermometer which is graded from the freezing point of water through to its boiling point. The accuracy with which you can measure the temperature of a cup of tea would be dependent on how many marks there are on the scale. A thermometer whose scale jumps in increments of 10 degrees would clearly be less accurate than a thermometer offering a scale in terms of single degrees.

So, how does this tie in to digital audio? Well, reading a thermometer is largely a digital process. That is to say, while there is theoretically an infinite spread of possible temperatures between freezing and boiling, if you were to record them, you'd be using finite approximations. The temperature may be 50.2 degrees, but you would write down 50 degrees. This is exactly what happens with digital audio. The number of tick marks shown between the minimum and maximum temperature can be thought of as the sampling resolution.

Figure I.2.2 shows what happens to a sine wave when the amplitude is measured. The first image shows the sine wave when only two states are possible, either on or off. The second image shows the same sine wave reproduced with slightly less coarse graduations. Finally, the third image shows how increasing the sampling resolution produces a greatly more accurate impression of the original sine wave. So, when people talk about bit-depth, or sample resolution, what they are in effect describing is how accurately an audio signal's amplitude can be measured.

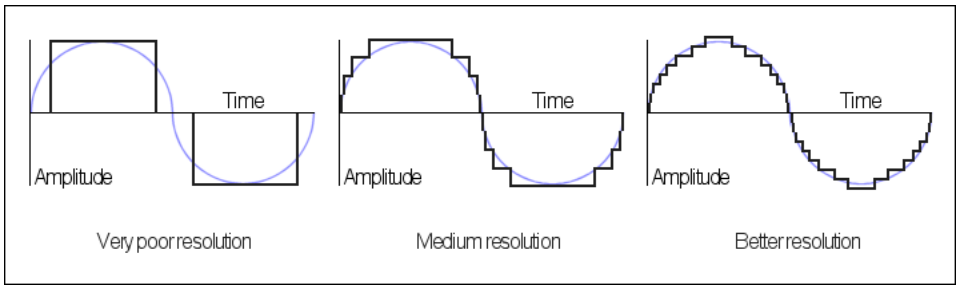


Figure I.2.2

Getting back to that thermometer for a second, what happens if the temperature being measured exceeds the boiling point of water? Well, in short, the temperature cannot be accurately recorded, and you would have to log it as "off the scale." If, for example, you were to heat a beaker of water to just above boiling, then allow it to cool, a chart showing temperature over time might look something like **Figure I.2.3**.

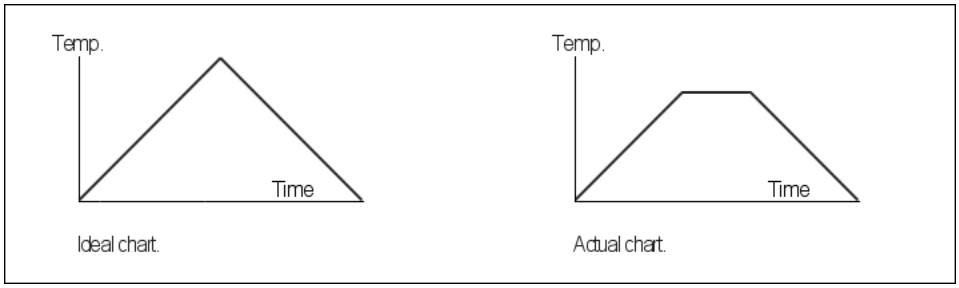


Figure I.2.3

Because the thermometer cannot measure temperatures above boiling, a whole section of the chart has been cut off (or clipped). Exactly the same thing happens when audio is being recorded digitally. Any audio that exceeds the maximum recordable level is simply clipped which produces a very unmusical form of distortion.

CD audio has a resolution of 16-bits. Modern sound-cards and audio devices can record at 24-bits or higher. A big advantage of recording at these higher bit depths is that you can reduce your input level enough to ensure that digital clipping is very unlikely to occur, while still maintaining a resolution that is greater than CD. Lowering the level may also help to reduce noise levels.

Sample Frequency (Sample Rate)

It is all very well having an accurate recording device, but recordings also need to be made frequently enough to be meaningful. If you were to take the temperature outside of your home, you would expect to obtain different results at different times of the day. If you were to look at your thermometer only at midday though, you only ever see one temperature, and you could be forgiven for thinking that it pretty much stays constant all day long. This is because your sampling frequency matches the frequency of the temperature cycle. To get a more accurate idea of how temperature changes throughout the day, you'd need to at least double the frequency of measurements, and take a second reading at midnight. In sampling terms, the need to record at a frequency at least double the highest desired frequency is known as Nyquist's Theorem. It is also the reason why CDs are recorded at 44 kHz, when the human ear can only hear up to around 22 kHz.

The sample frequency, therefore, is quite literally the number of times per second that the amplitude of an audio signal is measured.

When choosing a sample rate to record and work at, it is usually best to simply opt for whatever frequency at which your work will be distributed. If, for example, you are making music, and intend to have it printed to CD, you should probably work at 44.1 kHz.

Tip: If you wish to work at higher frequencies, and render down to a lower frequency when your project is complete, it is probably best to work at direct multiples of your target sample rate, e.g., 44.1 kHz and 88.2 kHz.

Introduction 3: MIDI Basics

If you are unfamiliar with MIDI, then perhaps the best analogy to start working with is one of those old player pianos — the kind with a large roll of punched paper that allowed the piano to play itself. MIDI is a modern version of that punched roll; it tells an instrument what notes to play, and a little about how to play them. In fact it is from these devices that the term “piano roll” used to describe MIDI editors in sequencers is derived.

A common misconception is to see MIDI data as being the sound. It is important to realise that MIDI is little more than a list of instructions that an instrument can follow. Much like a sheet of musical score, MIDI data by itself is rather abstract.

In practical terms, MIDI data is made up of three types of MIDI events: note events, controller events, and program changes. In reality these groups are not quite so clear cut, and there are other types, such as system exclusive (sysex) messages. For the purposes of working with MIDI in Tracktion though, the three groups above are all you really need to be aware of.

Note Events

A MIDI note event tells an instrument to play or stop playing a given note. When a key is struck on a keyboard, a MIDI note-on event is generated. The note-on event tells any attached MIDI devices which note was played, and the velocity with which it was struck. The MIDI note is considered to be held until a note-off event is generated by releasing the key. Velocity typically corresponds to “loudness,” but it may also affect the timbre of a sound; consider the way a piano sounds when keys are struck hard.

Controller Events

Most synthesizer keyboards have pitch bend and modulation wheels that allow the keyboardist to add extra character to a performance. These controls generate controller events that typically are used to change some nature of a sound over time. The modulation wheel for example may add a vibrato effect to a synthesizer performance. Most controllers are known as “continuous controllers” as they maintain their current state without needing to be held. In the same way that the modulation wheel will physically stay where you leave it, so too will the control changes generated by the wheel.

Technically pitch-bend is not a continuous controller, but for the purposes of working with Tracktion, it can be regarded as one.

Program Changes

A program (commonly referred to as a patch) in MIDI terms is one of the different preset sounds available on a MIDI device. A typical synthesizer may be able to emulate pianos, organs, violins, and bass sounds. Each of these different sounds would be a program. A special set of controller events can be used to change the current program on a MIDI device, but Tracktion makes it even easier by offering tools and options to insert program changes into edits.

MIDI Channels

Many MIDI devices are capable of playing more than one instrument at a time. Such devices are referred to as being “multi-timbral.” A multi-timbral MIDI device may be able to play a piano part, a percussive part, a bass part, and a flute, all at the same time. In order for the device to know which instruments are expected to play a given note received from Tracktion, the instruments are assigned a MIDI channel.

You can think of a MIDI channel as being broadly like a radio channel. In the same way that an FM tuner may be tuned to a radio station, the instruments in the MIDI device will only respond to MIDI events that are transmitted on their channel.

Each MIDI clip in Tracktion can be assigned a MIDI channel, and it is this channel that the MIDI events in the clip will be broadcast on. To make sure that a MIDI clip is played by the piano, therefore, you would simply set the MIDI channel for the clip to match the piano's channel.

There are 16 MIDI channels available for every physical MIDI output. It is not a rule, but it is convention that MIDI channel 10 is used for percussion.

Working With MIDI In Tracktion

You can enter MIDI into Tracktion either by recording a performance from a MIDI controller keyboard, or by entering the notes by hand. In addition, Tracktion features a handy hybrid of these two approaches, called "step editing." You will learn about MIDI editing in Chapter Four, and about recording MIDI in Chapter Five.

Because MIDI data merely controls an instrument, if you want to hear the MIDI data you will need a MIDI instrument capable of turning to the note instructions into sounds.

There are two types of MIDI instrument you can use with Tracktion:

Hardware Instruments

You can use all kinds of external MIDI equipment with Tracktion. Tracktion can control and record your hardware synthesisers and drum machines, in addition to calling up patches on hardware effects processors.

Software Instruments

Tracktion can support the use of software instruments (often referred to as soft synths). The most common type of software instruments are VST instruments, or VSTis. There are many VSTis available both for purchase and for free. Tracktion even ships with some to get you started. The flexibility and ease of use of these virtual synthesisers can stand in stark contrast to expensive, bulky, and often fiddly external equipment. As the quality of available VSTis grows ever closer to parity with classic hardware instruments, more and more musicians are adopting software synthesis as an important part of their sonic arsenal.

Chapter 1: The Projects Page

Chapter Contents

1.1. An Overview
The Projects Page In Brief
Project Management — Opening And Closing Projects
Using Folders To Manage Projects
Library Projects: A Special Case
Creating New Projects And Template Projects
1.2. The Projects List, And Project Properties
Folder Properties And Right-Click Options
Project Properties And Right-Click Options
1.3. The Items List
An Overview Of The Items List
1.4. The Control Panel
1.5. The Clipboard Panel
1.6. The Search Tool
1.7. Template Projects
1.8. Edit Properties
1.9. Audio Item Properties
The Properties
The Basic Editing Options
1.10. MIDI Item Properties
1.11. Movie Item Properties

1.1 : An Overview

The Projects Page In Brief

There is an old office wall aphorism that reads: “a tidy desk is the sign of a sick mind.” Whether or not this is true, losing important work in a pile of clutter is perhaps not the best path to good mental health either. Tracktion has many tools to help avoid the loss of work, as well as tools that can make it easier to find materials for a current project. The **projects** page provides a simple and seamless wrapper around many of these tools, making project management quick and painless; after all, no-one really likes to tidy their desk, do they?

If you have read the quick start guide, you will already by familiar with Tracktion projects, but in summary, a project can be thought of as a container for a complete song. All of the material used by the song will be contained in, or referenced by, the project.

Figure 1.1.1 shows Tracktion’s project page. You can see that there are a number of distinct regions. On the left hand side, working from top to bottom you have: the projects list, the search tool, and the control panel. The middle section of the screen contains the items list, and the properties panel. Finally, in the bottom-right corner of the page, there is a clipboard tool. Each of these sections will be covered in full in later sections of this chapter.

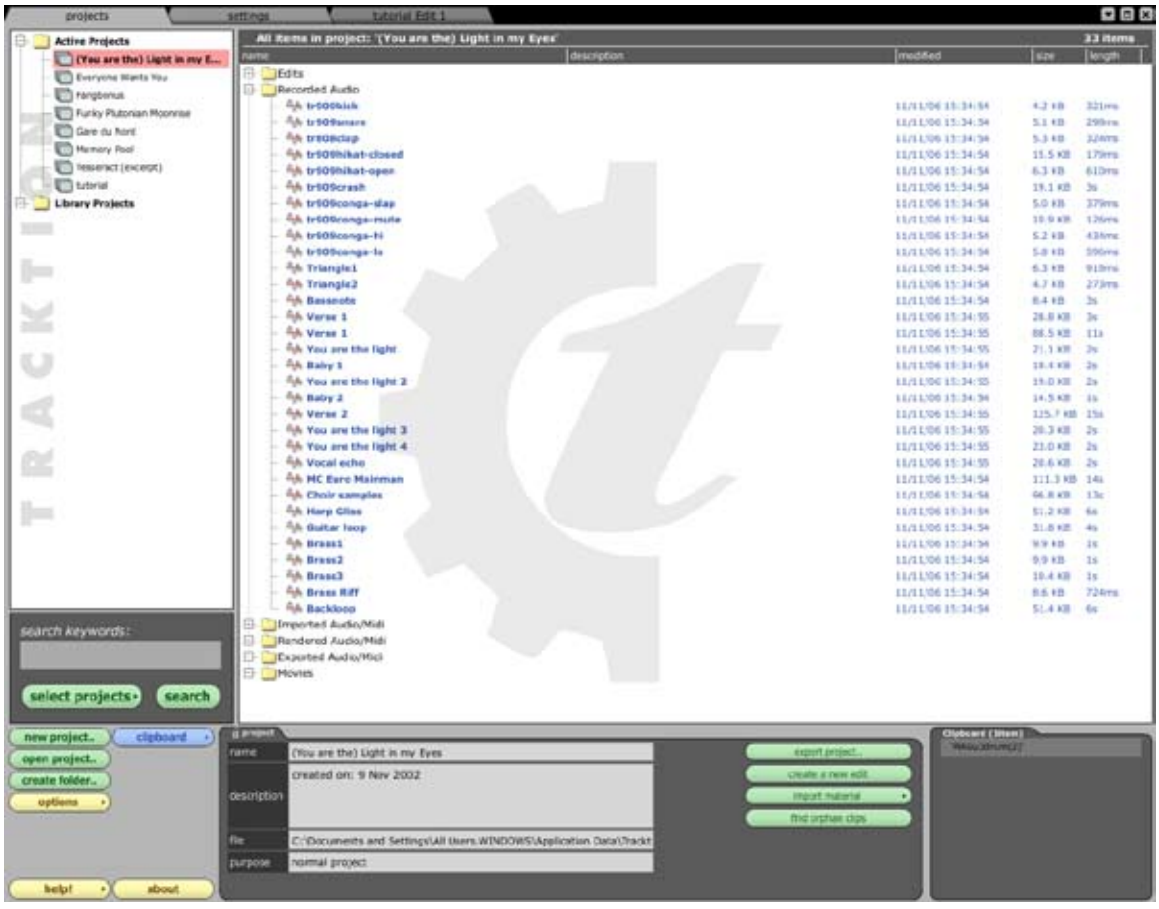


Figure 1.1.1

Project Management — Opening and Closing Projects.

Before we dive into too much detail, let's take a look at the projects page as a whole. In essence, the projects page is where you manage the songs and edits you are currently working on. It is not necessarily a list of all projects you have ever worked on; rather it is a list of active, or open, projects. This distinction is important, because unless a project has been opened, even though it may be on your hard-drive, it will not show in the list.

So what is an open project? In short an open project is simply a project that you have asked Tracktion keep handy for you. If you are familiar with the concept of bookmarks, or favourites in a web browser, you can think of open projects in the same way. The project isn't open in any real sense, just bookmarked for easy access. Similarly, closing a project does nothing more than remove the entry from the projects list. No changes are made to the actual project data on your disk.

So what's the point? Well, if you like to work on just a few projects at a time, and do not wish to be distracted by older projects that are either finished, or on hold, you can simply close those earlier works. In this way, your project list will contain only the projects that are relevant to you at any one time.

To open a project that has previously been closed:

- Click the **open project..** button in the control section (Fig. 1.1.2).

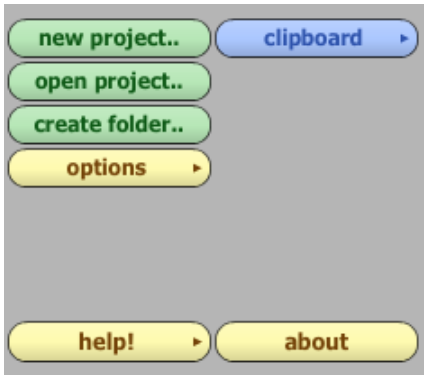


Figure 1.1.2

- You will be presented with a browse for file dialogue. Browse to the location on your hard-drive where the project file is located, and select it.

To close a project:

- Right-click on the entry in the project list.
- Select the option **close this project** from the pop-up menu (Fig. 1.1.3).

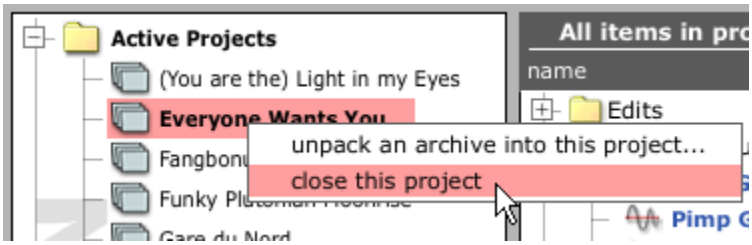


Figure 1.1.3

Using Folders To Manage Projects

When you first run Tracktion the tree view on the left of the projects page contains two folders, the “Active Projects” folder and the “Library Projects” folder. You can create your own folders here, allowing for greater flexibility in organizing and cataloguing your projects.

To create a folder:

- Click the **create folder..** button in the control section (Fig. 1.1.2).
- Enter a name for the folder at the prompt.
- Click OK.

The new folder will appear in the folder list as a top-level folder. Moving projects into this folder is simply a case of dragging them over the folder list entry.

In addition to top-level folders, you can also create sub-folders. It is even possible to create sub-folders inside sub-folders.

To create a sub-folder:

- Select the folder that will contain your new sub-folder.
- When the folder is selected, click the **create sub-folder..** button in the properties panel (Fig. 1.1.4).
- Enter a name for the folder at the prompt.
- Click OK.

Figure 1.1.4

Another easy way to impose order on the projects list is to re-order it. You have already seen how projects can be dragged between folders; in addition to this though, you can change the location of a project in the list by dragging it to the desired position. This simple trick can be handy with long project lists, as frequently accessed projects can be put near the top, thus avoiding the need to scan through the list for them.

Library Projects: A Special Case

By now you are probably wondering what the purpose of the **Library Projects** folder is. Typically, this folder is used to store material that may be shared between a number of projects. In particular, library projects could be created to consolidate material such as sample libraries and MIDI files that may otherwise be spread across various directories and hard-drives on your computer.

Adding samples to a library project can also help keep project archives as small as possible. Normally, when exporting an archive, all material used in the project or edit will be included in the archive file. Often this can lead to very large archive files. If a project contains material that is also present in a library project, this shared material can optionally be left out of the archive. Commonly used material such as percussion samples, that might otherwise be archived along with many different projects, can therefore be easily excluded from archives. Similarly, when transferring large projects between collaborators, library projects can provide a mechanism for including only material that has changed in an archive.

Creating New Projects And Template Projects

Creating projects is extremely easy; just click the **new project...** button in the control panel at the bottom left corner of the projects page, and you will be prompted for a project name, project location, and your choice of template. The name will simply be the name of your project. It will also be the name of the directory that Tracktion will create on your hard-disk for your project. The location field tells Tracktion whereabouts on your hard-drive you would like the project directory to be stored. The template field allows you to choose a default set-up for your new project. If you are unsure about this last setting, just leave it set to the default <none>.

The new project directory will contain two files: the project file, and a default edit file. The project file will be named after the project, and end with a ".tracktion" extension. The edit file name will take the form of <project name>Edit 1.trkedit. In addition to these two files, a number of folders will be created as you work with Tracktion. These folders are used to store the various audio, MIDI, and movie files that make up your project.

Template projects are a handy way to build a collection of pre-configured projects. If you find that you regularly use the same layout for input devices, or you like to start an edit with a simple drum part ready to go, you can create a suitable base project, and save it as a template. Then, when creating new projects, you can choose one of your templates and have everything set up ready for you. Template projects are covered in detail in Section Seven of this chapter.

To create a template:

- Create a new project, or open one that has a suitable edit already.
- Open the edit.
- Configure it to taste.
- Click the **save** button in the control panel, and from the pop-up menu, select **save edit as template.**
- When prompted, choose a name for your template.
- If you wish to include MIDI or audio clips in the template, tick the include clips option.
- Click OK.

This template will now be available when you next create a new project.

1.2 : The Projects List, And Project Properties

Folder Properties, And Right-Click Options

Selecting a folder in the projects list will show the properties of that folder in the properties panel (Fig. 1.2.1). If the folder is one of the two primary folders, i.e., the **active projects** and **library projects** folders, some of the options listed below will not be present. These options are noted below.

Figure 1.2.1

Name: This field holds the name of the folder. You can edit the text to rename the folder. This field will not be available for the active projects folder, or the library projects folder.

Load a project or archive..: This option allows you to open a previously closed project, or to import a Tracktion archive file. The project will be contained in the selected folder.

Create a new project..: Select this option to create a new project. You will be prompted for a folder in which the project should be created, and a template to use for the project. Section One of this chapter describes creating new projects in more detail.

Create sub-folder..: This option allows you to create a sub-folder in the selected folder. This can be useful if you like to organize your projects in a hierarchy.

Delete folder: This option will delete the selected folder, and all sub-folders. Additionally any projects contained in these folders will be closed. This field will not be available for the active projects folder, or the library projects folder.

Right-clicking on any project entry in either the active or the library project folders causes a pop-up menu (Fig. 1.2.2) to be displayed.

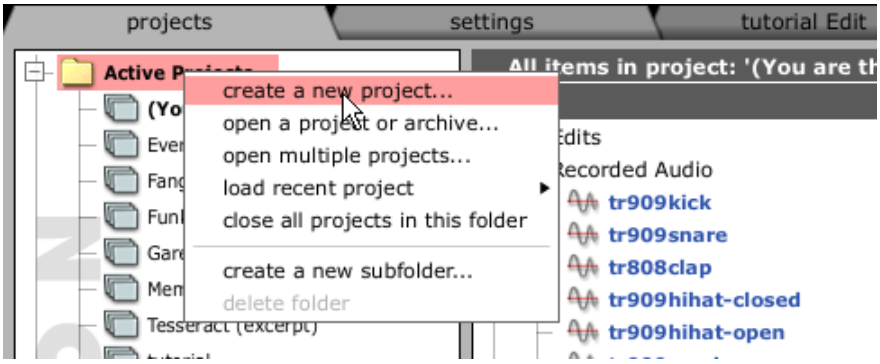


Figure 1.2.2

Create a new project: Select this option to create a new project. You will be prompted for a folder in which the project should be created, and a template to use for the project. Section One of this chapter describes creating new projects in more detail.

Open a project or archive: This option allows you to open a previously closed project, or import a Tracktion archive file. You will be prompted for the path to the project or archive file. If you import an archive, you will also be prompted for a folder in which to unpack the archive contents. Archives are discussed in more detail in Chapter Eight.

Open multiple projects..: Use this option to open one or more projects and add them to the folder. When this option is selected, you will be prompted to select a directory. All projects contained in the directory you choose will be opened and added to the current folder in the projects list.

Load a Recent Project: This option displays a sub-menu with a list of recently closed projects. Selecting one of the entries will re-open the project. This option will only be shown if you have recently closed a project.

Close All Projects in this Folder: This option simply closes all projects contained in the selected folder.

Create a new sub-folder: This option allows you to create a new sub-folder inside the current folder.

Delete folder: This option allows you to delete the current folder, and additionally close all projects contained within it. This option is not available for the active and library project folders.

Project Properties, And Right Click-Options

To access the properties of a project, click on its name in the projects list. The project properties will be shown in the properties panel (Fig. 1.2.3)

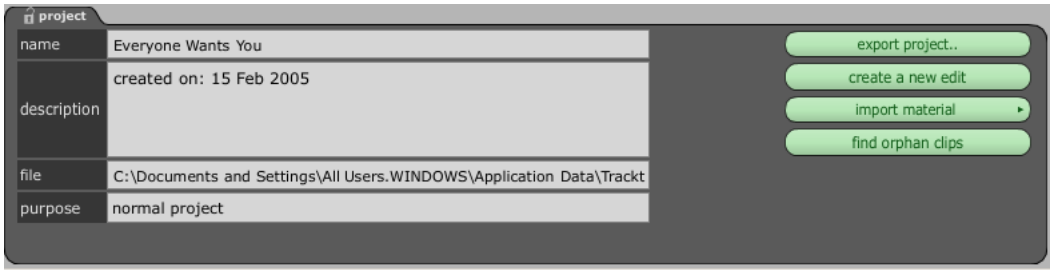


Figure 1.2.3

Name: This field holds the name of the project. You can edit the text to rename the project. Changing the name of the project may cause the project file to be renamed. This behaviour is controlled by the **rename mode** option described in Chapter 2.3. Note though that even if the **rename mode** option is set to rename files, only the project file name will be changed. The directory name will not be altered, as this could impact on other projects if they are referencing material in this project's directory.

Description: This field allows you to enter a description for the project. You can also use this field to leave yourself notes for future reference. The description is saved automatically as part of the project file.

File: This field shows the location of the project on your hard-drive.

Purpose: The purpose field describes the project type. This feature is reserved for future updates. Currently only "normal" project types are available.

Export project..: This option allows you to bundle the project and related materials into an archive. Use this if you want back up your work, or transfer it to another computer. Exporting projects as single archives can be a convenient method of transferring work between yourself and a collaborator. For more information on exporting projects, see Chapter Eight.

Create a new edit: This option creates a new, empty, edit in the current project. This option would typically be of most use if you wanted an empty scratch pad edit where you can try new ideas. If instead you wish to make a copy of an existing edit in the project, select that edit in the item-list and click the **make a copy of this edit** button in the properties panel.

Import material: Use this option to associate audio or MIDI files with this project, or to import tracks from an audio CD. When this option is selected, a pop-up menu (Fig. 1.2.4) will be shown:

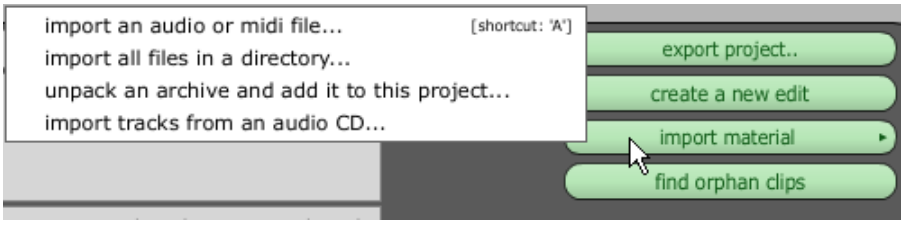

import an audio or midi file... [shortcut: 'A']
import all files in a directory...
unpack an archive and add it to this project...
import tracks from an audio CD...
export project..
create a new edit
import material
find orphan clips

Figure 1.2.4

- **Import an audio or MIDI File..:** Use this option to add material on your hard-drive, or on a data CD, to the project. Files located on CDs will be automatically copied into the project folder. If the file is stored on your hard-drive, you will be prompted whether you want to copy the file into the folder directory, or whether you would rather reference it from it's current location.
  Keyboard shortcut: A.
- **Import all files in a directory..:** This option works exactly like the "import an audio or MIDI file..." option above. The difference is that this option imports all suitable files in to the selected directory (folder).
- **Unpack an archive and add it to this project..:** This option adds the items from an archive into the current project. Project archives are discussed further in Chapter 10.
- **Import tracks from an audio CD...:** Use this option to copy tracks from an audio CD into Tracktion. The imported tracks are saved as audio files in the project folder and added to the edit as standard audio clips. Chapter Eight discusses the import audio tracks dialogue-box. Note that this option is not available on the Mac. Use the "Import an audio or MIDI File..." option instead.

Find orphan clips: This option allows you to find any audio or MIDI files that are listed in this project's items list, but are not used in any of its edits. This is often useful when you are trying to delete recordings that are no longer needed.

Right-clicking on any project entry in the projects list causes a pop-up menu (Fig. 1.2.5) to be displayed.

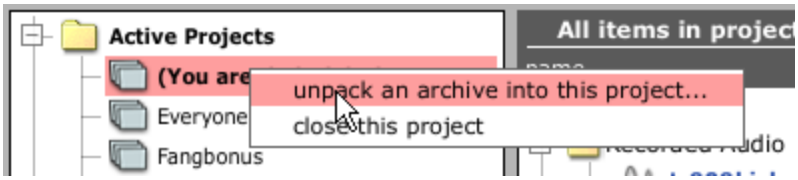


Figure 1.2.5

Unpack an archive into this project...: This option adds the items from an archive into the current project. Project archives are discussed further in Chapter Eight.

Close this project: Select this option to remove the current project from the projects list. Closing a project does not lose or delete the project; it merely clears the entry from the list allowing you to keep your work-space tidy. Closed projects can be re-opened at any time by clicking the **open project** button in the control section. In addition, recently closed projects can be re-opened by right-clicking on a folder in the projects list, and selecting them from the **open recent project** option.

1.3 : The Items List

An Overview Of The Items List

The items list shows the list of items that are associated with, or are a part of, the current project. To see the items in a project, click on its name in the projects list. The items list will update to show the project items.

The various item types, and their associated options and properties are described later on in this chapter. This section deals only with the items list interface.

The items list is divided into convenient folder groups. These groups allow you to quickly locate specific types of items.

If you wish to revert to the single list display:

- Click the **options** button located in the control panel. This will display a pop-up menu.
- Untick the **show folders** option in the menu.

In addition, from the same menu, you can also adjust the columns that are shown in the items list.

While it is not possible to drag content into the items list to add it, dragging existing items around within the list is possible. This can be useful if you wish to change the order in which items are listed. Note however that it is not possible to move items from one group folder to another, i.e., you cannot drag items that are currently in the **imported audio** folder over into the **recorded audio** folder.

Items in the list can also be sorted by column by clicking on a column header. When folders are shown, items are sorted within their folder groups. When folders are hidden, items are sorted in one long list.

If you wish to copy items in the items list into an edit, you can quickly add them to the clipboard by dragging them from the list into the clipboard area at the bottom right corner of the screen.

1.4 : The Control Panel

The control panel is located just below the **search box**, and provides easy access to much of the functionality of the projects page (see Figure 1.4.1).

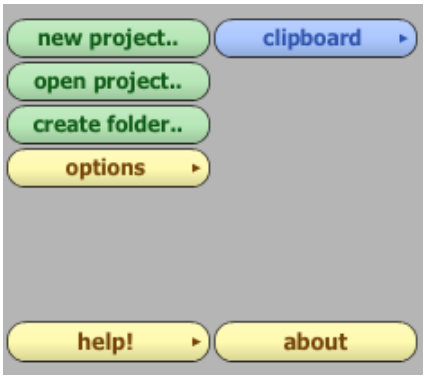


Figure 1.4.1

New project..: This button allows you to create a new empty project.

Your project, once created, will be stored on your hard-drive in a new directory of the same name as the project. You do not need to create an empty directory, as Tracktion will automatically do this for you.

When this button is clicked, Tracktion will display a dialogue box (Fig. 1.4.2) with the following fields:

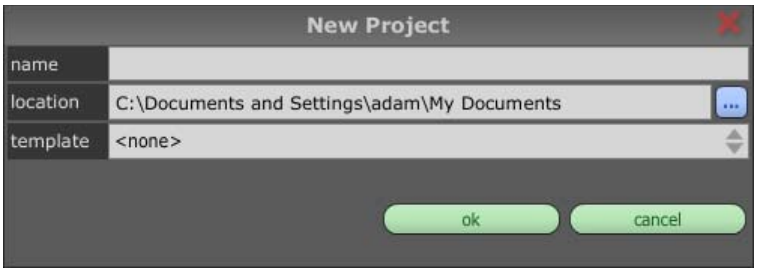


Figure 1.4.2

- **Name:** Enter a name for your new project here. As described above, this name will be used both for the project and the directory that will house it.
- **Location:** You can specify where the project folder should go by changing the path in this field. The button to the right of the field will display a directory requester dialogue box. You can use this requester to navigate to a suitable parent directory for your new project.
- **Template:** From this field you can select one of your project templates. A template is a project that can be used as the basis for other projects. This allows you to start a new project with pre-assigned inputs, frequently used effects, and pre-named tracks, for example. Templates are discussed in greater detail later on in this chapter.

The <none> option will create a standard empty project. If you have not yet created any template projects, this may be the only option you have available.

Clipboard: The clipboard button allows easy access to the common clipboard operations, such as copy and paste.

The contents of the clipboard are shown in the clipboard panel (discussed later in this chapter). You can use the clipboard to copy content between projects. When the edit page is showing, material on the clipboard can also be pasted into edits. This can be an efficient way of locating audio clips for use in an edit.

Clicking this button displays the following menu options (Fig. 1.4.3):

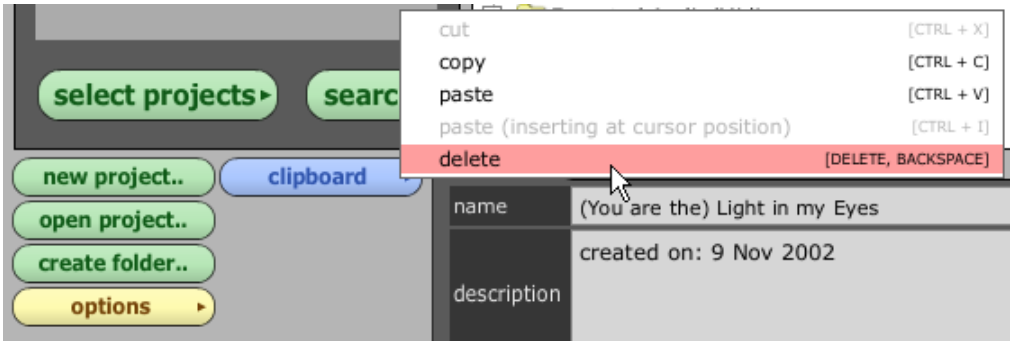


Figure 1.4.3

- **Cut:** The selected material is added to the clipboard.
- **Copy:** The selected material is added to the clipboard.
  Keyboard shortcut: CTRL + C (**CMD + C** for Mac users).
- **Paste:** Material on the clipboard will be pasted into the selected project. If the clipboard is empty, this option will be unavailable.
  Keyboard shortcut: CTRL + V (**CMD + V** for Mac users).
- **Paste (Inserting at Cursor Position):** This option is only available when the edit page is showing.
- **Delete:** The selected item will be deleted. You will be prompted whether you wish to delete the item, or the item and the source file. The former option will simply disassociate the item with the project, leaving the source file on your hard-drive untouched; the second option, will delete both the item, and the source file.
  Keyboard shortcuts: DELETE and **BACKSPACE**.

Open project: Click this button to open a previously closed project, or import a Tracktion archive file. You will be prompted for the path to the project or archive file. If you import an archive, you will also be prompted for a folder in which to unpack the archive contents.

Create Folder..: This option allows you to create a folder in the projects list. The new folder will reside at the top-level of the folder tree, meaning it will be a peer, not a sub-folder, of the active and library projects folders.

If you wish to create a sub-folder, instead select a folder and click the **create sub folder** option in the properties panel.

Options: When clicked, this button displays a pop-up menu (Fig. 1.4.4) from which you can configure the behaviour of the items list.

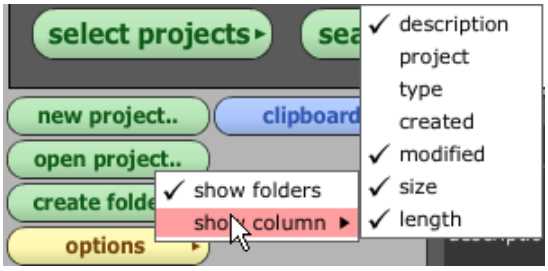


Figure 1.4.4

- **Show Folders:** If this option is ticked, items in the items list are categorized into folders, based on item type. This typically makes large projects easier to navigate and manage. When this option is unticked, the items list will simply be a long list of all items.
- **Show Column:** This option allows you to select which fields are displayed in the items list. The fields are presented in a sub-menu. Ticked fields will be displayed.

Help: This button display a menu with various tools for accessing assistance with using Tracktion.

- **Show the Tracktion Quick Start Guide:** This option will display the Tracktion Quick-Start Guide in PDF form.
- **Show the Tracktion Reference Manual:** This option will display this document in PDF form.
- **Turn on pop-up help:** When this option is ticked, help messages will be shown over user interface components when the mouse pointer hovers above them for a few moments.
- **Use longer delay before pop-up help appears:** This option works in conjunction with the pop-up help option above. When pop-up help is active, ticking this option increases the amount of time that the mouse pointer must hover over an item before the help message is shown.
- **First run wizard:** Select this option to run the first run wizard. This can be useful if you have changed hardware in your system, and want Tracktion to configure it for you.

About: This button displays copyright information, credits, and other information about Tracktion. It also shows your registration information, and provides a location where you can easily register Tracktion if it is not already registered.

1.5 : The Clipboard Panel

The clipboard panel (Fig. 1.5.1) shows the current contents of Tracktion's clipboard. Whenever copy or cut operations are performed on items within Tracktion, they will be added to, or replace the existing contents of the clipboard.

Figure 1.5.1

Tracktion's clipboard can contain multiple items. This means that in addition to the standard editing options typically associated with clipboards, such as copy, cut, and paste, you can use the clipboard to efficiently move large amounts of content between projects, and as a way of rapidly constructing basic frameworks for songs.

A standard copy or cut operation will always replace the contents of the clipboard with the selected item. If you wish to add multiple items to the clipboard, you should instead drag them in to the clipboard panel.

Note: When the edit page is selected, you can view the clipboard contents by clicking the **clipboard** button, and selecting the **show clipboard contents** option. The contents of the clipboard will be shown in the quick find panel on the left side of the screen. You can also use the keyboard shortcut: **CTRL + ALT + C** (**CMD + CTRL + C** for Mac users).

If you right-click on an item in the clipboard panel, you will be presented with a pop-up menu (Fig. 1.5.2) containing the following options:

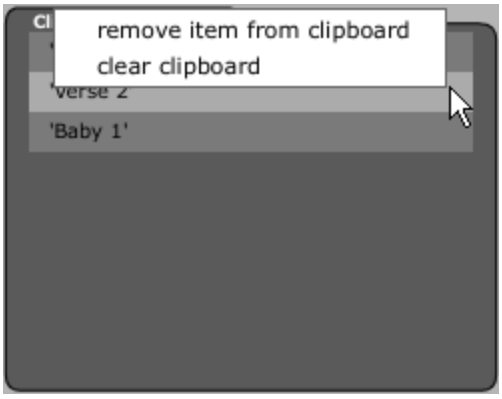


Figure 1.5.2

Remove Item From Clipboard: Use this option to remove a single item from the list.

Clear Clipboard: All clipboard contents will be cleared.

1.6 : The Search Tool

The search tool (Fig. 1.6.1) allows you to quickly find content in your open projects.

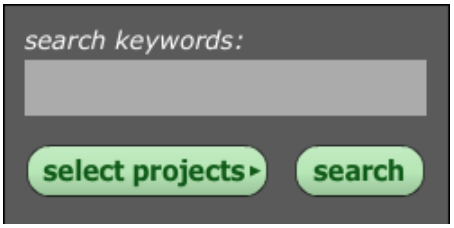


Figure 1.6.1

Searching is simply a case of:

- Click the **select projects** button, and untick any projects you do not wish to include in the search.
- Enter some search keywords in the text box. If, for example you are looking for a guitar part, and you are fairly sure that either the recording's name, or description, contains the word "slide," you could try entering that in the search keywords box.
- Click **search**.

Once Tracktion has finished searching, all media that matches your search keywords will be shown in the items list.

1.7 : Template Projects

Templates projects are a handy way to build a collection of pre-configured projects.

Perhaps, like many musicians, you like to start projects with a standard rhythm section, that you can use as a basis while building your melody and song structure; perhaps you like to start a project with your input devices already assigned to suitably named tracks, ready to record your band's jamming sessions; or, maybe, you simply like to have standard effects and instrument plug-ins ready to go on your tracks. Whatever the scenario, you've no doubt at some stage found yourself wishing that new projects could have some basic form from the outset. This is where templates come in.

A template is nothing more than an edit that can be used as the starting point of a new project.

Creating template projects is therefore simply a case of adjusting an edit to match your preferred initial project state, and when ready, saving it as a template. The edit could be part of a new project created specifically for the purpose of being a template, or a part of an existing project that is close to your desired template layout.

To save an edit as a template, click the **save** button in the edit page's control panel. From the pop-up select the option **save edit as template**. You will be prompted for a template name (Fig. 1.7.1). It is a good idea to enter something meaningful in the name box, as over time you may develop a small library of templates.

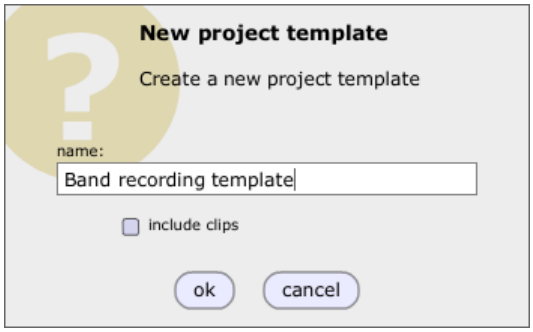


Figure 1.7.1

In addition to the template name, the **New Project Template** dialogue has an option called **include clips**. If this check-box is ticked, any clips in the edit will be included in the template. If, as in the first scenario above, you want your template to feature a pre-written rhythm section, you would tick this option. If, on the other hand, you just want an empty edit that features a standard input layout, or filter section layout, you should leave this option unchecked.

Once you have one or more templates created, you will be able to select them when creating new projects. The New Project dialogue box has a field called **template**, from which you can select one of your templates. If a template other than <none> is specified, the new project will be created as normal, but the default edit will take the form of the edit used to create the template.

1.8 : Edit Properties

When an edit item is selected in the items list, its properties are displayed in the properties panel (Fig. 1.8.1). Various tools and options related to the edit can be found on this panel.

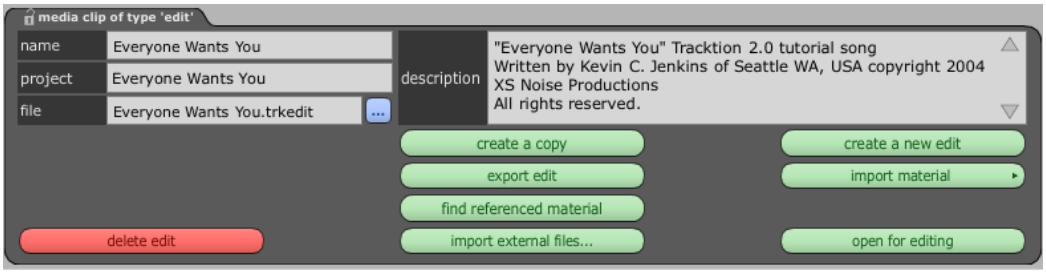


Figure 1.8.1

Name: This field shows the edit's name, as seen in the items list. You can also alter the name here; this does not necessarily affect the edit's file name, however. See Chapter 2.6 for details on item renaming behaviour.

Project: This field shows the project to which this edit belongs.

Description: This field allows you to enter a description of the edit, or make notes for future reference. Bear in mind that this field is scanned by the search tool, so by inserting simple keywords into descriptions, you can make it very easy to locate the edit later. The description is automatically saved to the project file.

File: This field shows the location of the edit on your hard-drive. The button to the right displays a pop-up menu (Fig. 1.8.2) with the following options:

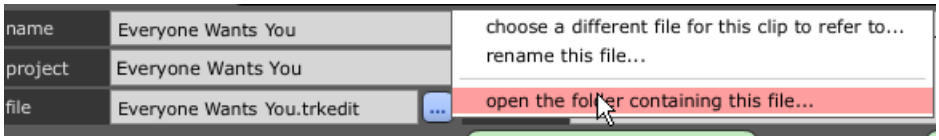


Figure 1.8.2

- **Choose a different file for this clip to refer to... :** This option allows you to change the underlying file for the edit. Only use this option if you are sure of what you are doing!
- **Rename this file... :** You can rename the edit file.
- **Open the folder containing this file.. :** Typically your edits and recordings will all reside in the project folder. This option is therefore a handy way of looking to see which files are physically present in the project folder.

Delete edit: Click this button to remove the edit from the project. Be aware that this option cannot be undone! Keyboard shortcuts: **DELETE** and **BACKSPACE**.

Create a copy: Use this option to create a copy of this edit and add it to the project. This can be useful if you wish to try out new musical ideas without risk of losing and spoiling your work so far, or if you wish to produce different mixes of a song.

Export edit: This option allows you to bundle the edit and related materials into an archive. Use this if you want back up your work, or transfer it to another computer for you or a collaborator to work on. Exporting an edit is similar to exporting a project except that other edits within the project will not included in the archive.

Selecting this option will display a dialogue-box where options related to the archive export can be set. The **export edit** dialogue box offers a range of options to strip unnecessary material from the archive. These options are not available when exporting projects.

You may also be interested in reading Chapter Eight, where you will find more information on exporting and importing edits.

Find referenced material: This option lists all of the items that this edit requires. It is effectively the inverse of the **find orphaned clips** function for projects.

Import external files...: It is possible for material to be used in more than one project. If one of these projects does not have an entry in its item list for the shared material, Tracktion regards the other project as being the material's owner. If the project that owns the material is later closed, the current edit will no longer have access to the material.

This option creates an items list entry for such files, thus making the current project an owner of the material.

Create new edit: This option creates a new empty edit in the current project.

Import material: Use this option to associate audio or MIDI files with this edit, or to import tracks from an audio CD. When this option is clicked, a pop-up menu (Fig. 1.8.3) will be shown.

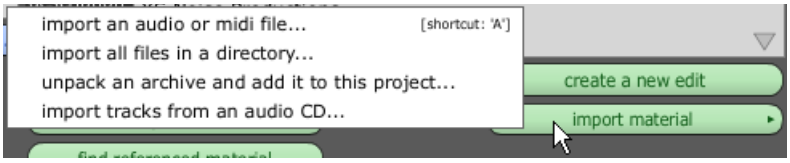

import an audio or midi file... [shortcut: 'A']
import all files in a directory...
unpack an archive and add it to this project...
import tracks from an audio CD...
create a new edit
import material

Figure 1.8.3

- **Import an audio or MIDI file...:** This option allows you to add material on your hard-drive or a data CD to the project. Files located on CDs are automatically copied into the project folder, whereas you will be prompted to select whether files stored on a hard-drive should be copied into the project folder, or referenced from their source location.
  Keyboard shortcut: **A**.
- **Import all files in a directory...:** This option works much like the "import an audio or MIDI file..." option above. The difference is that this option imports all suitable files in the selected directory (folder).
- **Unpack an archive and add it to this project..:** This option adds the items from an archive into the current project. The pop-up menu that is displayed when right-clicking on a project-list entry also provides this option. Importing archives is discussed in Chapter Eight.
- **Import tracks from an audio CD...:** This option copies tracks from an audio CD into Tracktion. The imported tracks are saved as audio files in the project folder and added to the edit as standard audio clips. The dialogue-box that is displayed when this option is selected is explained in Chapter Eight. This option is not available on Macs. Instead, use the **import an audio or MIDI file** option.

Open for editing: Clicking this button opens the edit, and switches to the edit page. The edit page is where your arrangements are actually created, and it is there where you will do most of your work. You can also open an edit by double-clicking on the edit item.

1.9 : Audio Item Properties

The Properties

When an audio item is selected, its properties are displayed in the properties panel (Fig. 1.9.1). Various tools and options related to the audio file can be found on this panel.

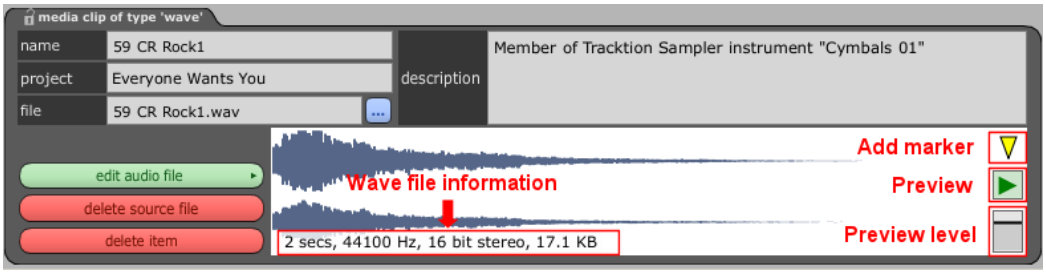


Figure 1.9.1

Name: This field shows the audio item name, as seen in the items list. You can also alter the name here. This does not necessarily affect the audio clip's file name, however. See Chapter 2.6 for details on item renaming behaviour.

Project: This field shows the project to which this audio item belongs.

File: This field shows the location of the audio file on your hard-drive. The button to the right displays a pop-up menu (Fig. 1.9.2) with the following options:

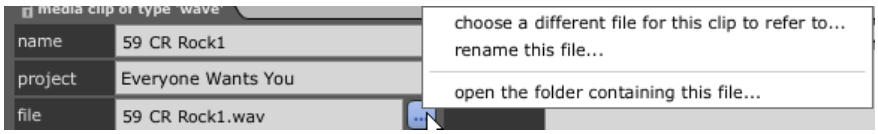


Figure 1.9.2

- **Choose a different file for this clip to refer to...:** This option allows you to change the underlying file for the audio item. This can be useful if the file has been moved, and Tracktion cannot find it. In this case, you can use this option to locate the audio file and re-associate it with the item.
- **Rename this file...:** You can rename the audio file.
- **Open the folder containing this file...:** Typically your edits and recordings will all reside in the project folder. This option is therefore a handy way of looking to see which files are physically present in the project folder.

Description: This field allows you to enter a description for the audio clip, or make notes for future reference. Bear in mind that this field is scanned by the search tool. By inserting simple keywords into descriptions, you can make it very easy to locate material later. The description is saved automatically with the project.

Edit audio file: This button shows a pop-up menu (Fig. 1.9.3) with the following options:

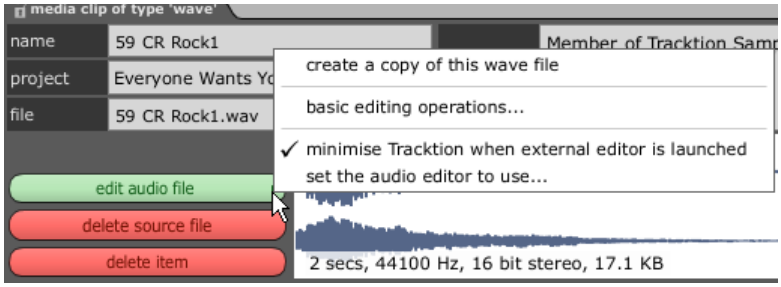


Figure 1.9.3

- **Create a copy of this wave file:** This option creates a copy of the audio file, and places it in the same folder as the original.
- **Basic editing operations:** This option displays a dialogue box that allows you to reverse the sample, change the sample rate, change the bit depth, normalise the sample, trim silence, and convert the audio to mono. The basic editing options are described a little later in this section.
- **Edit using...:** If you have suitable audio editing software installed on your computer, you can quickly transfer audio material to the editing application using this option. If this menu-option is not available, use the **set the audio editor to use** option to choose an audio editor.
- **Minimise Tracktion when external editor is launched:** This option causes Tracktion's display to minimise when an external editor is launched. This is useful when working in a single-monitor environment. If you are working with two monitors however, you may prefer to uncheck it.
- **Set the audio editor to use..:** This option allows you to choose a default wave file editor (see the **edit using** option above).

Delete source file: Click this to delete the source audio file, leaving the item in place. Be aware, this operation cannot be undone! Once the source file has been deleted, you can use the **find missing file** option to associate the item with an alternate file.

Delete item: Click this button to remove the item from the project. You will be prompted if you want to remove the source file as well.
Keyboard shortcuts: **DELETE** and **BACKSPACE**.

Find missing file: If the file that this item refers to has been moved or deleted, you can use this option to search for the file, or replace it with an alternate. When this option is selected, you will be given the option to search a directory or browse for a file. If you choose to search, Tracktion will attempt to find the mislaid file. If you choose to browse, you will be given a chance to manually locate the file, or a replacement. This option is only available if the source file cannot be found.

Add marker: This option allows you to mark points of interest on audio files. Drag the arrow to point at the region to which you wish to draw attention. For example, if you feel that a vocal take needs a touch of pitch correction at a certain point, you could use this tool to highlight the problem for future correction.

Preview: Click this to preview the audio file.

Preview level: Use this option to adjust the volume level at which previews will be played.

Wave file information: This shows useful information about the resolution, and nature of an audio file.

The Basic Editing Options

Selecting the **basic editing options** menu-item from the **edit audio file** button menu causes a dialogue-box (Fig. 1.9.4) to be shown. From this dialogue-box, you can access a number of useful tools for working with audio files. Be aware that these operations are all destructive, so be sure that you wish to make permanent changes to your source audio file!

Figure 1.9.4

The **operation type** field shows a drop-down menu when selected. From this menu you can select from a number of different operations. The options available below this field will change depending on the operation selected.

Trim silence: Use this option to remove audio that is below a given threshold from either end of the audio file. When this operation type is selected, the following options are available (Fig. 1.9.4):

- **Threshold:** Any audio below this threshold will be trimmed.
- **Trim start:** When this option is selected, audio below the threshold level at the start of the wave file will be trimmed.
- **Trim end:** When this option is selected, audio below the threshold level at the end of the wave file will be trimmed.

Normalise: Use this option to adjust the level of the audio such that the peak level of the wave file reaches the desired normalise level. Typically, normalisation would be used to make an audio file as loud as possible without introducing any digital distortion, or clipping. There is only one option available for normalise, **peak level**, and it is this level to which the file will be normalised (Fig. 1.9.5).

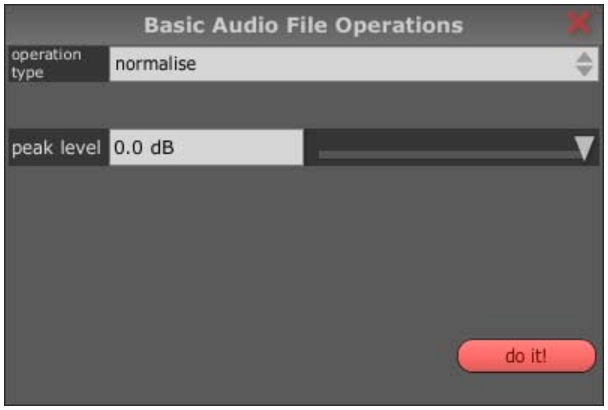


Figure 1.9.5

Make mono: Use this option to convert a stereo audio file into a mono file. You can opt to merge the two stereo channels together, or to disregard either the left or right channels. This option is not available when working with mono files (Fig. 1.9.6).

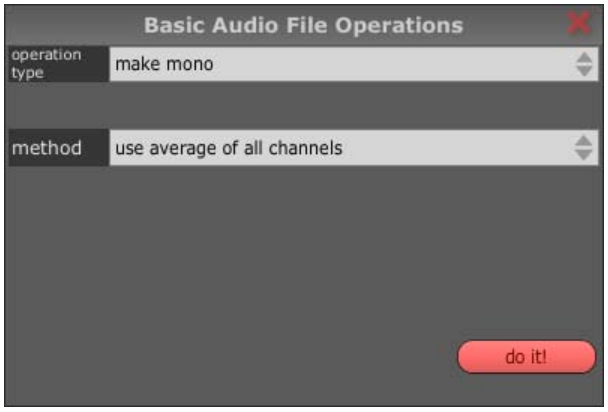


Figure 1.9.6

Change sample rate: If you wish to have Tracktion convert the sample rate of an audio file to a different rate, you can use this option (Fig. 1.9.7).

Change bit depth: This option allows you to alter the bit depth of the audio file (Fig. 1.9.8).

Reverse: This option can be used to reverse the audio file. Reversed audio files are literally played backwards. There are no options available for this operation (Fig. 1.9.9).

Figure 1.9.7

Figure 1.9.8

Figure 1.9.9

1.10 : MIDI Item Properties

When a MIDI item is selected, its properties are displayed in the properties panel (Fig. 1.10.1). Various tools and options related to the MIDI item can be found on this panel.

Figure 1.10.1

Name: This field shows the MIDI item name, as seen in the items list. You can also alter the name here; this does not necessarily affect the MIDI clip's file name, however. See Chapter 2.6 for details on item renaming behaviour.

Project: This field shows the project to which this MIDI item belongs.

File: This field shows the location of the MIDI file on your hard-drive. The button to the right displays a pop-up menu (Fig. 1.10.2) with the following options:

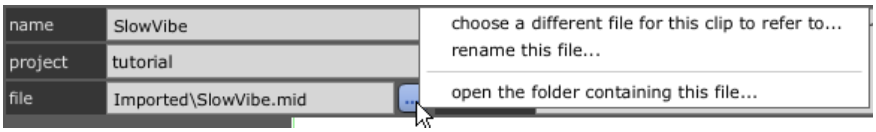


Figure 1.10.2

- **Choose a different file for this clip to refer to...:** This option allows you to change the underlying file for the MIDI item. This can be useful if the file has been moved, and Tracktion cannot find it. In this case, you can use this option to locate the MIDI file and re-associate it with the item.
- **Rename this file...:** You can rename the MIDI file.
- **Open the folder containing this file..:** Typically your edits and recordings will all reside in the project folder. This option is therefore a handy way of looking to see which files are physically present in the project folder.

Description: This field allows you to enter a description of the MIDI clip, or make notes for future reference. Bear in mind that this field is scanned by the search tool. By inserting simple keywords into descriptions, you can make it very easy to locate material later.

Delete source file: Click this button to delete the source MIDI file. Be aware, this operation cannot be undone! Once the source file has been deleted, you can use the **find missing file** option to associate the item with an alternate file.

Delete item: Click this button to remove the item from the project. You will be prompted to choose whether you want to remove the source file as well.
Keyboard shortcut: **DELETE** or **BACKSPACE**.

Add marker: This option allows you to mark points of interest in MIDI clips. Drag the arrow to point at the region to which you wish attention to be drawn.

Preview: Click this to preview the MIDI file. The preview will be played through the default output MIDI device.

Preview level: Use this option to adjust the velocity level at which previews will be played. Note, because different MIDI instruments, and even programs on those instruments, react differently to velocity level changes, this option is not guaranteed to adjust the volume.

1.11 : Movie Item Properties

When a movie item is selected, its properties are displayed in the properties panel (Fig. 1.11.1). Various tools and options related to the movie item can be found on this panel.

Figure 1.11.1

Name: This field shows the movie item name, as seen in the items list. You can also alter the name here; this does not necessarily affect the movie item's file name, however. See Chapter 2.6 for details on item renaming behaviour.

Project: This field shows the project to which this movie item belongs.

File: This field shows the location of the movie file on your hard-drive. The button to the right displays a pop-up menu (Fig. 1.11.2) with the following options:

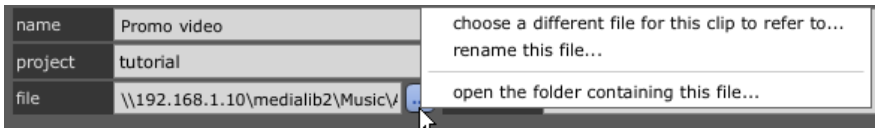


Figure 1.11.2

- **Choose a different file for this clip to refer to...:** This option allows you to change the underlying file for the movie item. This can be useful if the file has been moved, and Tracktion cannot find it. In this case, you can use this option to locate the movie file and re-associate it with the item.
- **Rename this file...:** You can rename the movie file.
- **Open the folder containing this file..:** Typically your edits and recordings will all reside in the project folder. This option is therefore a handy way of looking to see which filSes are physically present in the project folder.

Description: This field allows you to enter a description of the movie, or make notes for future reference. Bear in mind that this field is scanned by the search tool. By inserting simple keywords into descriptions, you can make it very easy to locate material later.

View movie: Click this to preview the movie. You will need the player QuickTime installed. QuickTime will be included as standard on Macs, and for PC users, it is available on your Tracktion install DVD (Tracktion Ultimate and Tracktion Project). If you do not have a boxed version of Tracktion, you can obtain QuickTime from Apple's web-site (http://www.apple.com).

Delete source file: Click this button to delete the source movie file. Be aware, this operation cannot be undone! Once the source file has been deleted, you can use the **find missing file** option to associate the item with an alternate file.

Delete item: Click this button to remove the item from the project. You will be prompted if you want to remove the source file as well.
Keyboard shortcuts: DELETE and **BACKSPACE**.

Chapter 2: The Settings Page

Chapter Contents

2.1 : Audio Settings
The Audio Input And Output Devices
PC And ASIO Drivers
Mac And CoreAudio Drivers
Input Device Properties
Output Device Properties
2.2 : MIDI Settings
MIDI Input Device Properties
MIDI Output Device Properties
2.3 : User Interface
The User Interface Options
Using The Colour Editor
2.4 : Plugins
2.5 : Loop Settings
2.6 : File Settings
2.7 : Key-Mappings
2.8 : Control Surfaces
Installing Control Surfaces Into Tracktion
Custom Controllers
Selected Controller Properties
Mackie Control Universal Specific Properties
Custom Control Surface Specific Properties
The Edit Control Mappings Window

2.1 : Audio I/O

Settings related to your audio input and output devices can be managed from the **audio** group on the settings page (Fig. 2.1.1).

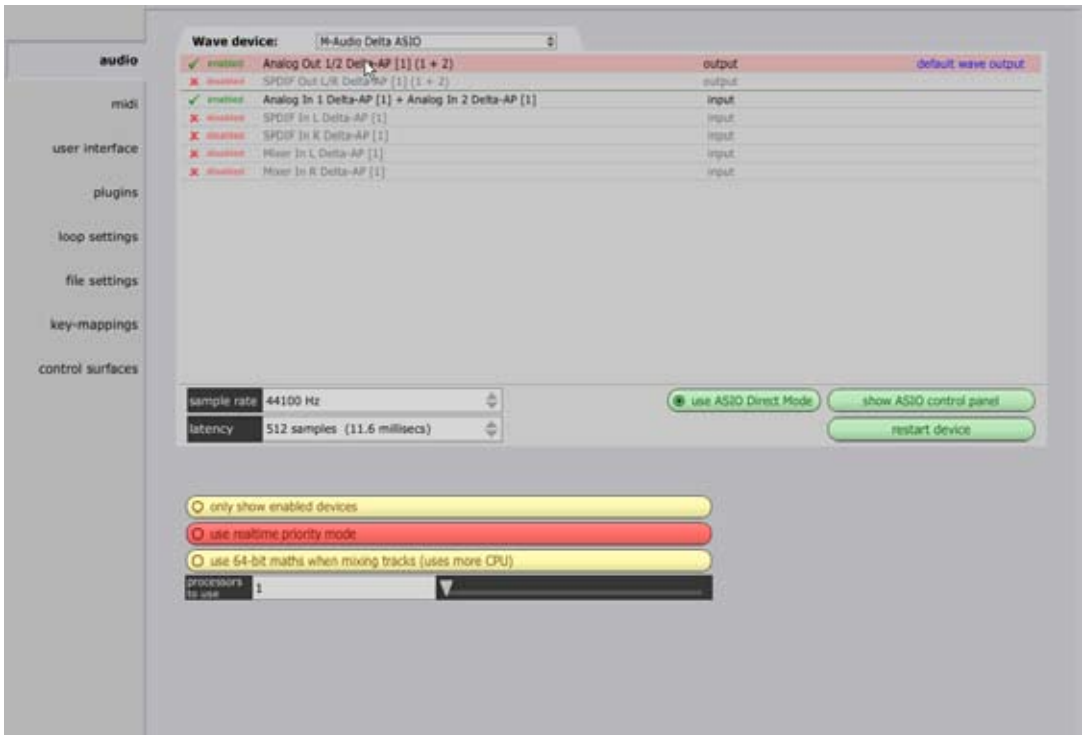


Figure 2.1.1

At the top of this display there is a drop-down list labelled **Wave device**. This is where you choose your audio device. In Tracktion, the term “device” is used to refer to all input and output hardware, such as sound-cards and MIDI interfaces. Tracktion will normally select a suitable ASIO or CoreAudio driver by default. If you have more than one sound-card installed, or Tracktion chooses a DirectSound driver instead of an ASIO one, you may need to change this.

The entries in the wave device list refer to the available audio drivers installed on your computer. There may be a number of entries in this list depending on the type(s) of sound-card(s) you have installed, but generally speaking, you will only be interested in the ASIO/CoreAudio options, as these offer the best performance within Tracktion.

The Audio Input And Output Devices

With a suitable wave device chosen, select which audio inputs and outputs you will be using. When a device is disabled here, it will not be available as an input or output in Tracktion’s edit page. Disabling unwanted inputs and outputs can thus reduce visual clutter and make it easier to locate the devices you are using. To enable or disable an audio device, just click on the enable/disable label to the left of the entry. Note also that you can do this at any time, so infrequently used input/output devices can also be disabled, as enabling them is never more than a few mouse clicks away.

Note: if you believe you should be seeing more input and output devices than are currently listed, ensure that the option “**only show enabled devices**” is not checked.

You can also nominate one audio output to be the “default audio device.” This device will then become the master output device. To make a different output the default, just click on the **make this the default** label.

Below the input and output device list, there are some extra settings. These settings will vary slightly depending on whether you are using a Mac or a PC.

Sample rate: This control sets the sample rate that Tracktion uses for playback and mixing. For audio intended for CD you will typically want to set this to 44100. Opinion is split on whether working at higher rates is worthwhile, as it typically more than doubles the load on your computer. If, however, you like to work at higher sample rates then it is a good idea to increase this value in fixed multiples of your desired final sample rate, e.g., 88200 Hz (44100 x 2) for CD audio.

Be aware that higher sample rates require correspondingly more processing power, so doubling the sample rate will likely halve the amount of effects, VSTis, and tracks, your computer can process.

Latency: This control defines how much of a buffer will be used by Tracktion when transferring audio to / from your audio device. A buffer is necessary to achieve reliable recording and playback performance. If your computer is temporarily unable to keep up with the demands of real-time audio, and there is no buffer, or if the buffer size is too small, data loss is likely to occur. This data loss will be audible to you as pops and clicks.

Setting the ideal buffer size unfortunately requires a trade-off; on the one hand you need a buffer large enough to provide error free performance, but on the other hand, if the buffer size is too large, you may begin to notice a delay between Tracktion processing a sound, and the sound being audible through your monitors. This delay is called “latency,” and it is this latency that is being referred to above. Too much latency may be noticeable to you when playing live, so ideally the latency value should be set as low as your computer can handle without introducing errors into your recordings.

Perhaps the best strategy for determining the ideal latency setting is to start high, and over time, adjust the value downwards until you reach a level that is comfortable when playing live, and yet yields reliable, error free playback and recording.

Restart device: Clicking this button causes Tracktion to re-initialise the drivers for your audio hardware. This can sometimes help if the audio driver crashes. In addition for PC users, if you have made changes to your hardware settings through the ASIO control panel, then you may need to restart the audio device before Tracktion will recognise the changes.

Show only enabled devices: When this option is checked, input and output devices that are set to disabled will not be shown in the list of I/O devices above. This can be handy when there are a lot of input and output devices, and you are only interested in those you have enabled.

Use 64-bit maths when mixing tracks (uses more CPU): When this option is enabled, all summing inside Tracktion is performed at 64-bit floating point, instead of the standard 32-bit. This can increase summing accuracy in edits that contain lots of tracks, though for the most part the improvements will be below the threshold of human hearing.

Processors to use: If your computer has more than one CPU, or the CPU has multiple cores, you can use this control to specify how many of these processors are utilized by Tracktion. You will be able to set this value to a number between 1 and the total number of CPUs your computer has available. For example, if your PC has a single “dual core” processor, you will be able to choose between Tracktion using one or both of those cores. Typically you will want to set this value to the highest possible position to ensure that Tracktion can take full advantage of your available computing power. However, if you are running some other CPU intensive application alongside Tracktion, you can reduce the number of processors that Tracktion uses, which will free up the remainder for the other software.

PC And ASIO Drivers

There are a few extra ASIO related options available for PC users. These options are not relevant to Mac users.

Use ASIO direct mode: This option may improve performance with some ASIO drivers. Typically it is benign at worst, and many USB devices will benefit from it, so it is probably worth leaving it enabled. If you are having problems with sound in Tracktion, you should try toggling this setting though.

If ASIO Direct mode is turned off, then Tracktion will use a slower but safer method of working with ASIO drivers.

Show ASIO control panel: This button displays the control panel for the currently selected ASIO device. Please note, the screen you see here will be specific to your hardware, so refer to the documentation that came with your audio hardware for further information.

Use real-time priority mode: This option can help with compatibility for some ASIO sound cards. Real-time priority mode allows the ASIO drivers to take precedence for computing resources over all other tasks that are running on your computer. This can reduce the risk of audio stuttering. This option can be dangerous though, as it may conflict with some VST plug-ins, causing your entire system to freeze. For that reason, you should only enable this option when absolutely necessary.

PC users note: Some ASIO drivers do not allow settings such as sample rate and latency to be adjusted by external applications. If your ASIO driver is one of these cases, then Tracktion's sample rate and latency options will have only the current values as choices. In this case you will need to set these values from the ASIO driver's own interface by clicking the "**show ASIO control panel**" button. Be sure to click the "**restart device**" button when you are done.

Mac And CoreAudio Drivers

If you are using a Mac and some of your CoreAudio devices are not listed, this may be because they are not currently connected to the Mac. Close Tracktion, check the connections, and try again.

A good way to check if a CoreAudio device is properly connected to your computer, is to launch the "AudioMidi Setup" Utility and make sure that the device in question is available as a hardware choice.

Input Device Properties

When an audio input device is selected, its various configuration options will be displayed in the properties panel (Fig. 2.1.2).

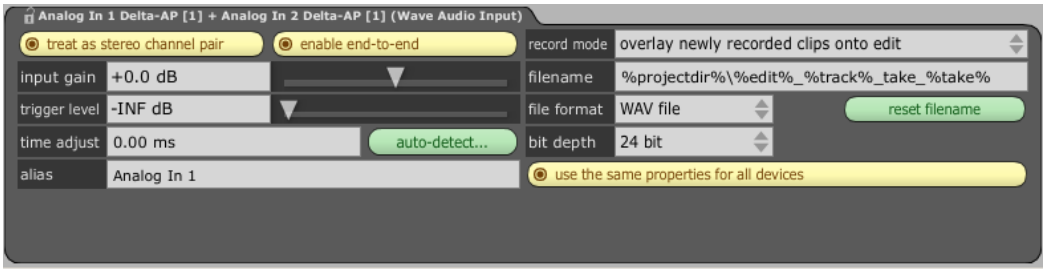


Figure 2.1.2

Treat as stereo pair: You can opt to have Tracktion combine two mono audio inputs into a single stereo pair. When disabled, the two channels will appear as two mono devices; when enabled, they will appear as one stereo device. The files created when recording through mono input devices, will be mono. Audio recorded to a stereo input will likewise produce stereo files.

Enable end-to-end: When end-to-end is active on an input, audio will be received during playback, and not just when recording. If an input is actively receiving input, it will be using some of your computer's processing power. However, enabling this option would allow you to use Tracktion as an effects processor for a live external audio source, such as a guitar, or vocals. Generally you will want to leave this option enabled since you can silence inputs within the edit page at any time.

Note: In addition to this end-to-end option, there is a global end-to-end option in the transport section This global end-to-end option allows Tracktion to receive and transmit audio and MIDI data even when playback is stopped. If you are intending to use Tracktion to apply effects to a live guitar, vocal, or synthesiser performance, you should enable this end-to-end option also.

Input gain: This option allows you to boost or cut the level of the incoming audio. You should use caution when adjusting this setting as the gain adjust is performed digitally after the signal has been converted from analogue. Changing the gain will therefore not help with proper gain staging; it is simply a convenience for a situation where you know you will need to increase the gain of the recorded audio files. It can also serve to obscure problems with gain-staging that should be corrected at source. For this reason, it is usually best leave this setting at 0dB, and if necessary, change the gain of the recorded audio non-destructively using the channel fader or clip level properties from inside the edit page.

Trigger level: Recording from this device will only begin when the trigger level has been reached. It is good practise to leave this setting at "–INF dB" when not needed, as it may save you a few frustrating minutes trying to work out why your recordings are being lost.

You can use the trigger level as an alternative to punched recording:

- In the edit page, select the audio input though which you wish to make recording.
- The properties-panel will show the audio-input-device options with an extra input meter.
- Use this input meter to see the audio level of any background noise reaching the input.
- Set the trigger level at a few dBs above the noise-floor level.
- Start recording. If you have set the threshold correctly, Tracktion will begin recording from this device when the vocalist or instrumentalist attached to this input begins their performance.

Time adjust: If you find that your recorded audio is a little early or late in relation to everything else, try adjusting this value to compensate. The **auto detect** button can be used to have Tracktion automatically compensate for timing errors caused by audio hardware.

Auto-detect: The auto-detect option will determine the time taken for audio to pass through the converters of your audio hardware, and configure the time adjust field to compensate for any delay. To perform the delay detection, Tracktion sends a series of pulses from an audio output device, and records the time taken for them to reach the audio input device. Before starting the test, you will need to connect a cable from one of your audio outputs to the input you wish to test.

It is a good idea to use the auto-detect option after installing/re-installing Tracktion, or adding new audio hardware to your computer.

Alias: If you have a number of input devices, it can sometimes be hard to keep track of them all. You may, therefore, find it helpful to enter a descriptive name in the alias box.

Record mode: This option controls how the recorded material is added to the edit. There are three modes (Fig. 2.1.3):

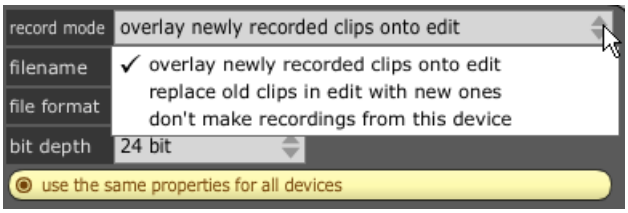

record mode
overlay newly recorded clips onto edit
filename
file format
bit depth
24 bit
overlay newly recorded clips onto edit
replace old clips in edit with new ones
don't make recordings from this device
use the same properties for all devices

Figure 2.1.3

- **Overlay newly recorded clips onto edit:** When this option is selected, recorded audio clips will be placed on top of the existing clips.
- **Replace old clips in edit with new ones:** When this option is selected, new clips will delete existing clips. The existing audio material will not be lost, however, and this operation is entirely non-destructive.
- **Don't make recordings from this device:** Select this option if you need end-to-end capability for this input, but do not wish to record from it. For example, if you are recording from one or more inputs and wish to monitor signal on another input, but don't want recordings to be made from it at the current time, you can use this option.

Filename: You can create custom file-name patterns for recorded audio. The file name pattern defines both where recorded audio files will be stored, and what they will be called. The default setting for this field ensures that recorded audio is stored in the project folder, and is named for the track it was recorded on. The **reset filename** button will restore this default for you. The first part of the pattern "%projectdir%" tells Tracktion that you want to store the recorded audio in the same directory as the project. You could replace this value with an absolute path, such as "d:\recordings".

The following special patterns can be used:
%projectdir% = this is replaced by the current project's "Recorded Audio" folder.
%edit% = this is replaced by the name of the edit.
%track% = this is replaced by the name of the track.
%date% = this is replaced by the current date as DDMMYYYY.
%time% = this is replaced by the current time as HHMMSS.
%take% = this is replaced by the number of recording takes.

File format: You can select whether Tracktion stores recorded audio as a "broadcast wav", "aiff", "flac" or "wave 64" format file. If you choose to store the audio as a wav file, Tracktion will insert an industry standard BWAV time-stamp. This allows audio to be quickly aligned to its original position, without affecting compatibility with any other software in which you might access your recorded audio. If you choose the FLAC option, Tracktion will store the audio using lossless compression, giving typically 50% smaller file sizes with no loss of quality. The wave64 option is particularly useful if you are making very long recordings (typically more than one to two hours, depending on the bit depth and sample rate). Standard wav and aiff files can only support audio files up to 2GB in size. Wave64, on the other hand, provides support for extremely long recordings, but it is not quite so widely supported by other applications as the more mainstream wav and aiff types. Since you can export your audio in any format, choosing Wave 64 is generally the safest approach unless disk space is limited, in which case FLAC might be a good choice.

Bit depth: You can select the bit depth to use for the saved audio. Note, this does not set the recording resolution for the audio input. The bit-depth that the signal is recorded at is determined by the audio drivers for the input device. This setting only affects the format of the audio file that is stored to disc. If your input device can only record at 16-bit, setting the bit-depth to anything higher than 16-bit will therefore not produce any benefits.

Reset filename: If you have changed the contents of the **filename** field, you can use this button to restore the default setting.

Use the same properties for all devices: When this option is selected, all audio input devices will share the same settings. Changing a setting on one device will apply that setting to all devices. Clicking this button displays a pop-up menu (Fig. 2.1.4) that offers the following options:

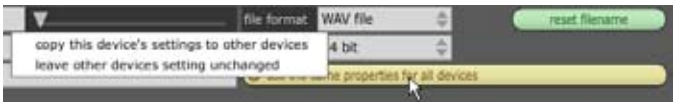


Figure 2.1.4

- **Copy this device's settings to other devices:** When this option is selected, the properties for the current device are applied to all other audio input devices.
- **Leave other devices settings unchanged:** When this option is selected, the properties of other devices are not altered. This option allows you to change an option globally, without affecting other options.

It typically makes sense to enable this setting, especially if you have an audio device with many inputs, but if you need to set different settings for each device, then you can disable it.

Output Device Properties

When an audio output device is selected, its various configuration options will be displayed in the properties panel (Fig. 2.1.5).

Analog Out 1/2 Delta-AP [1] (1 + 2) (Wave Audio Output)
treat as stereo channel pair
dithering enabled
left/right reversed
alias
Analog Out 1/2 Delta-AP [1] (1 + 2)

Figure 2.1.5

Treat as stereo pair: You can opt to have Tracktion combine two mono audio outputs into a single stereo pair. When disabled, the two channels will appear as two mono devices; when enabled, they will appear as one stereo device.

Dithering enabled: Dithering can subjectively improve quality when reducing the sample resolution from Tracktion's internal 64/32/24-bit format, to the 16-bit format used by some audio devices and standard CDs.

Left/right reversed: When selected, the left and right channels are swapped. You can use this option to correct for audio devices with incorrect stereo configuration, or patching mistakes in your studio.

2.2 : MIDI I/O

Settings related to your MIDI input and output devices can be managed from the **MIDI** group on the settings page (Fig. 2.2.1).

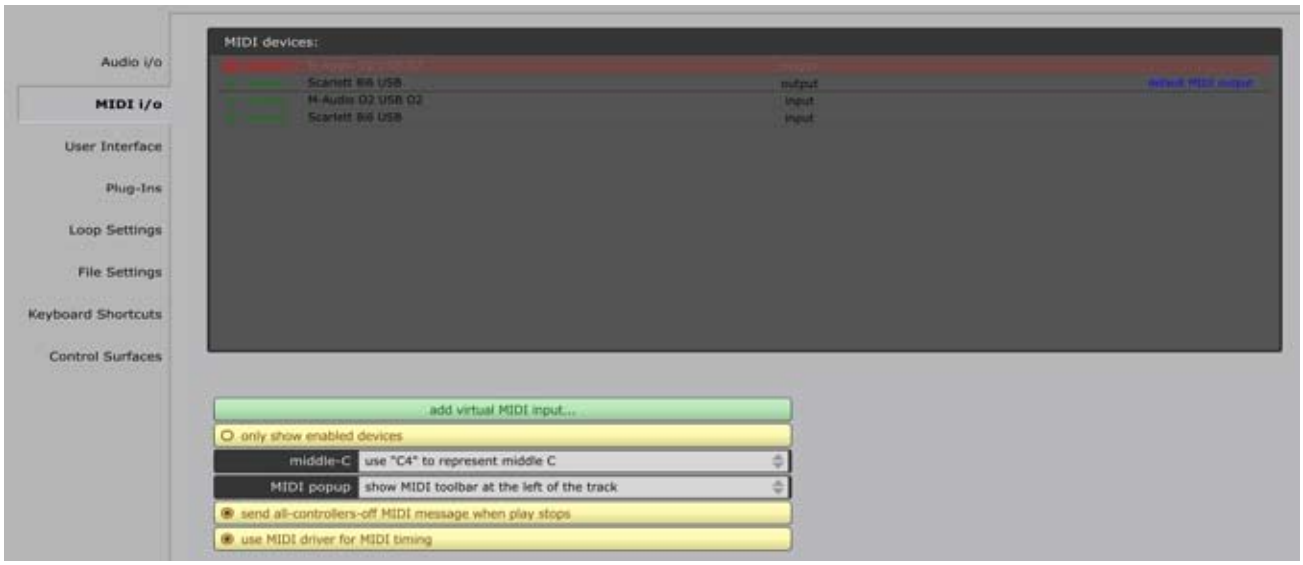


Figure 2.2.1

The list of available MIDI input and output devices will be shown in the main list. You can enable or disable MIDI I/O devices, and while MIDI devices typically consume little computing power, you may still find it useful to disable those that you do not need, as this helps to keep things tidy, and will help you find the inputs you need when recording.

To enable or disable a MIDI device, just click on the enable/disable label to the left of the entry.

You can nominate one MIDI output to be the “default MIDI device.” The default output will be used by the click-track and for MIDI clip previews . To make a different output the default, just click on the **make this the default** label.

Add virtual MIDI input...: You can create a clone of a MIDI input such that two inputs both representing the same physical MIDI input devices, are available on the edit page. For example if your have two control devices both sharing one MIDI input, or a MIDI control keyboard that supports keyboard zones, you can duplicate an input and send each copy to a different track in your edit. This can be used to control two different virtual instruments, or to create layering effects amongst other things.

Show only enabled devices: This option causes disabled input and outputs to be hidden. Enabling this option can be convenient if your MIDI interface has a large number of inputs and / or outputs, some of which you rarely use. You will need to uncheck this setting temporarily if you wish to enable devices that are currently disabled, however.

Middle-C: Unfortunately there is some disagreement in the MIDI world as to which octave should be used for the C of middle C. If you have a specific preference, or need to work with other software or hardware where middle C is not considered to be C4, you can change this setting accordingly. Typically the default C4 is a good choice though.

MIDI popup: This option controls where the piano display should appear when editing MIDI clips. You can opt to have it appear at the left of the track, or to snap to the left edge of the selected clip.

Send all-controllers-off MIDI message when play stops: This option controls whether Tracktion will send what is effectively a reset message to MIDI devices when playback stops. Typically this is a good idea, as it reduces the risk of stuck notes, but some MIDI devices can react strangely to this message. If you are finding that your MIDI equipment is doing something unexpected when playback stops, try disabling this option.

Use MIDI driver for MIDI timing: Tracktion can optionally use a MIDI device's driver for timing or your computer's internal MIDI clock. Generally speaking it is better to use the driver for timing, but if you are experiencing jitter you can experiment with this setting.

MIDI Input Device Properties

When a MIDI input device is selected, its various configuration options will be displayed in the properties panel (Fig. 2.2.2).

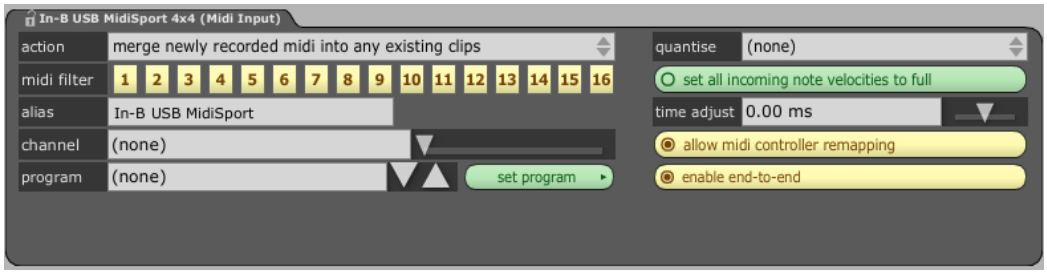


Figure 2.2.2

Action: This option controls how the recorded MIDI material will be added to the edit. There are four modes:

- **Merge newly recorded MIDI into any existing clips:** When this option is selected, MIDI data will be added to existing clips. New clips will only be created if no clip is already present. This option can be particularly handy as it allows you to build up a complex MIDI performance that you cannot play live in one pass. When looped playback mode is enabled, you could build up the clip over a number of iterations. The various recording modes are described in detail in Chapter 5.3.
- **Overlay new clips containing newly recorded MIDI:** When this option is selected, new clips will be created and placed on top of existing clips in the edit. When looped playback mode is active, a loop clip, containing each loop pass as a separate take will be created. The various recording modes are described in detail in Chapter 5.3.
- **Replace existing clips with newly recorded clips:** When this option is selected, any existing clips will be deleted by newly recorded clips.
- **End-to-end from this device but don't actually record:** Select this option if you do not wish to record from this device, but wish it to be active whilst recording is in progress. For example, if you are recording from one or more inputs, and wish to monitor signal on another input but don't want recordings to be made from it at the current time, you can use this option.

MIDI filter: MIDI data will be passed from the input (and recorded) for all enabled MIDI channels. Disabling any of the 16 channel buttons will filter out those channels. MIDI data transmitted on these disabled channels will be ignored by Tracktion, and will not be transmitted or recorded.

Channel: This option allows you to assign a default MIDI channel for any MIDI recorded through this input.

Program: If you wish to assign a default program to recorded MIDI, you can choose the program here. When this button is clicked, a pop-up menu is shown from which you can select a General MIDI (GM) program name. You can also select how many banks should be shown.

Alias: If you have a number of input devices, it can sometimes be hard to keep track of them all. You may therefore find it helpful to enter a descriptive name in the alias box.

Set program: This option provides a convenient pop-up menu to set the "program" value. It has a sub-menu item allowing you to set the number of banks of programs to use.

Quantise: Destructively quantises the incoming notes to the note size selected from the list.

Note: MIDI clips have a non-destructive quantise tool that you may wish to use instead of this.

Set all incoming note velocities to full: Select this option to force all Incoming note velocities to full (velocity value 127).

Time adjust: If you find that your recorded MIDI is a little early or late in relation to everything else, try adjusting this value to compensate.

Allow controller remapping: Controller remapping allows MIDI controllers, such as a modulation wheel, to control parameters of VST plug-ins. When this option is disabled, no remapping will be allowed for this input.

Enable end-to-end: When end-to-end is active on an input, MIDI will be received during playback, and not just when recording. Generally you will want to leave this option enabled, since you can silence inputs within the edit page at any time.

MIDI Output Device Properties

When a MIDI output device is selected, its various configuration options will be displayed in the properties-panel (Fig. 2.2.3).

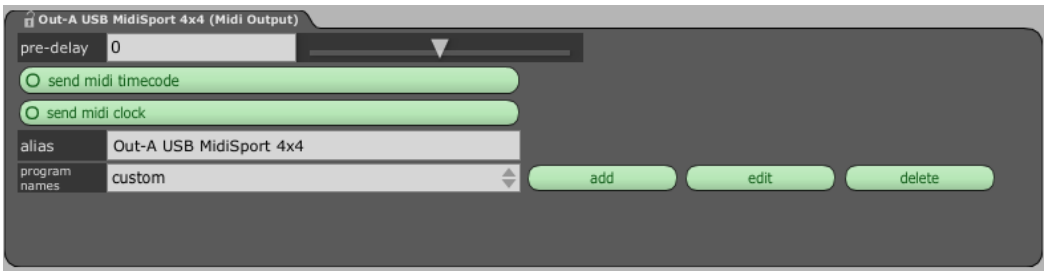


Figure 2.2.3

Pre-delay: If you find that your external MIDI equipment tends to trigger its sound a little early, or late, in relation to everything else, try adjusting this value to compensate. The pre-delay value is given in milliseconds.

Send midi timecode: When this option is selected, this MIDI output will send MIDI timecode to any attached devices.

MIDI timecode is a very powerful synchronisation tool that shares much in common with SMPTE. MIDI timecode carries time-of-day information that allows for a degree of error recovery if timing messages are lost; this makes it a very robust method by which to synchronise two or more MIDI devices.

Midi timecode will be sent at the frame rate of the edit. This is set from the timecode menu on the edit page.

Send midi clock: When this option is selected, this MIDI output will send a MIDI clock signal to any attached devices. MIDI clock is the most simple form of synchronisation between two MIDI devices. Unlike MIDI timecode, it carries no time information, just a pulse that effectively stamps out a metronome. Other MIDI devices can then use the pulse to keep time with the master device.

Alias: This option allows you to provide an alternate name for the MIDI output device. This alias will be shown in menus and options where output devices can be selected. This is useful if you have a number of MIDI devices, as you could, for example, name each MIDI output device for the hardware that is connected to it. In this way you would not need to remember which MIDI output is attached to a given MIDI instrument when selecting an output.

Program Names: This option, and the three buttons to the right of it are used to set up MIDI program names for this output. This means that you can select MIDI programs on a MIDI instrument by name when inserting program changes into clips. Default factory pre-set program names are included for various a number of MIDI instruments, and custom program name sets can be created too. Chapter 4.3 provides more detail on configuring programs.

2.3 : User Interface

The User Interface Options

Settings related to Tracktion's user interface can be managed from the user interface group on the settings page (Fig. 2.3.1).

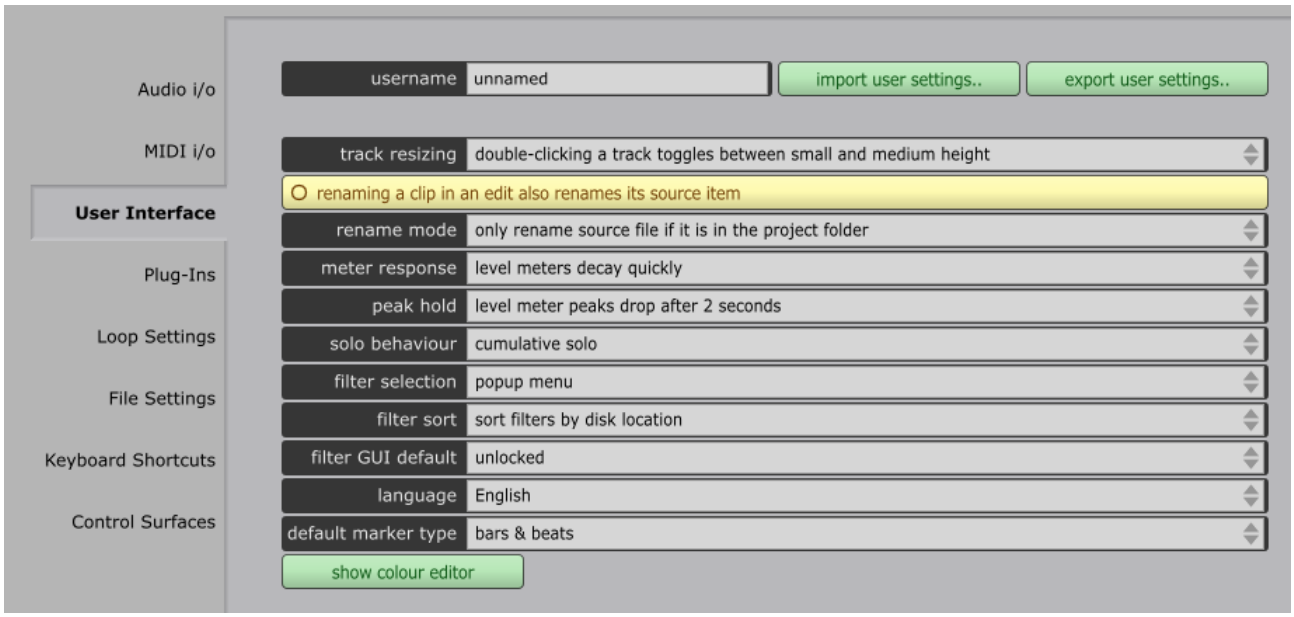


Figure 2.3.1

Username: Set the name of the current Tracktion user. The given user name is stored in the configuration file, and is also stored in edits. Future versions of Tracktion may allow for advanced user based project management tools.

Import user-settings / export user-settings: You can use these buttons to save and recall configuration settings. This allows you to backup your configuration settings, and also to create custom configurations for different projects or types of project.

Track resizing: This controls how tracks and clips vertically resize when double-clicked.

- **Double-clicking a track toggles between small and medium height:** A double-click on a clip or a track causes the track to resize to a size roughly six times the default track height. This height is large enough for the MIDI editor tools to become available. A subsequent double-click reduces the track to the default size.
- **Double-clicking a track toggles between small and large height:** A double-click on a clip or a track causes the track to resize to nearly the height of the arrange area. A subsequent double-click reduces the track to the default size.
- **Double-clicking a track toggles between small, medium, and large heights:** Each double-click cycles the track height between the three stages.

Renaming a clip in an edit also renames its source item: When enabled, renaming clips in the edit page will cause the corresponding entry in the items list to be renamed.

Rename mode: This option controls how the source files are renamed when their item names are changed. There are three options:

- **Always rename source file:** Changing the name of an item will always rename the source file, irrespective of where the file is located on your hard-drive. This can be dangerous, because if two or more projects make use of the file, a simple clip rename in one project will cause the other projects to lose the file.
- **Only rename source file if it is in project folder:** Changing the name of an item will only rename the source file if it is located in the project folder.
- **Never rename source file:** Renaming a clip will never rename the file that contains the source material.

Meter response: This setting controls how quickly level meters decay. You can choose between slowly, quickly, and instantly.

Peak hold: Here you can set for how long the peak level indicator is held.

- **Level meter peaks drop after two seconds:** When this option is selected, level meters will show the highest level attained within the last two seconds.
- **Level meter peaks drop after ten seconds:** When this option is selected, level meters will show the highest level attained within the last two seconds.
- **Level meter peaks never drop:** When this option is selected, the peak level will be shown until playback is restarted.

Solo Behaviour: You can adjust the behaviour of the solo buttons to one of two options:

- **Cumulative solo:** When cumulative solo is selected as the solo behaviour, multiple tracks can be soloed by simply clicking their solo buttons. This mode mimics the behaviour of a hardware mixer.
- **Exclusive solo:** When exclusive solo is selected, each time a track is soloed, all other tracks are unsoloed. This mode can be useful if you tend to focus on one track at a time.

The solo behaviour can be temporarily overridden by holding down the **CTRL** key (**CMD** for Macs) when clicking the solo button.

Filter selection: This option controls the way your filter list is displayed when adding new filters to tracks. There are two modes:

- **Popup menu:** When this mode is selected, the filter list is shown as a pop-up menu. Each folder in your filter list will be shown as menu entry, and its contents as a sub-menu. The pop-up menu will be located at the point where you are inserting the new filter. This option is typically the better of the two, since it reduces the need to move the mouse away from the filter, and then back again to edit it.
- **Popup tree:** When this mode is selected, a treeview list is shown. As with the popup menu, filters are organized in folders according to plug-in directory layout. Unlike the pop-up menu though, the contents of these folders are just shown as part of the tree. This option may be preferable if your filters are organized in a very deeply nested hierarchy, as it can reduce the need to drill down through sub-menus.

Filter sort: Controls how filters are sorted in the new filter popup or tree-view.

- **Sort filters by disk location:** By default the new filter lists will replicate the layout of your VST plugin folder, such that plugins that placed in a 'piano' folder on your drive will be represented in a corresponding 'piano' when adding filters to your edit.
- **Sort filters by category:** When this mode is selected, Tracktion will attempt to determine whether a plugin filter is an effect, a synth, or something else (such as a hybrid effect/synth). The filter list will thus contain 'effect', 'synth', and 'other' folders which will contain all filters of those types.
- **Sort filters by manufacturer:** When this option is selected, the filter list will contain folders for each filter manufacturer in your plugin library.

Filter GUI default: This control specifies whether filter windows are opened in the locked or unlocked state by default. Locked filters will not disappear when they lose focus. This allows you to edit the settings of more than one plug-in at a time, for example. It can also be useful if you have dual monitors, and therefore can leave windows open without obscuring other parts of the Tracktion interface. If you would prefer Tracktion to close filter windows for you once they lose focus, choose the unlocked option. This second option is generally useful when you have limited screen space available. In both cases, the behaviour can be easily overridden from the filter's title bar.

Language: This is where you can select the language that you want Tracktion to use for its user interface. You can choose between English, French, German, and Spanish. Changes to the language require restarting Tracktion in order to take effect.

Default markers type: You can select the default type of marker to be created when adding markers through the keyboard numeric entry system. If you select automatic then the marker type will be chosen by Tracktion based on whether the timeline is current in Beats and Bars mode or Absolute Timecode, or alternatively, which of the marker tracks is currently selected.

Audio clip import: Tracktion can automatically make copies of imported audio in the project folder, allowing you to work safely with the audio, free from the risk that changes may impact other projects. The trade-off is that files will be replicated across your hard-drive, potentially wasting space. You can use this option to specify when Tracktion will make a local copy of an imported audio file. There are three available options:

- **Ask if file should be copied:** When this mode is selected, Tracktion will give you the option of making a local copy of source audio files whenever audio material is imported into an edit.
- **Always copy the file:** When this mode is selected, imported audio will always be copied into the project folder.
- **Only copy if file on a network:** When this mode is selected, imported audio will only be copied if it is located on a network or some other potentially temporary storage device.

Show colour editor: This option displays the colour editor for configuring the appearance of Tracktion. The colour editor is very powerful, allowing nearly every aspect of Tracktion's user interface to be altered. You will learn about the colour editor on the next page.

Using The Colour Editor

The colour editor (Fig. 2.3.2) allows you to adjust Tracktion's appearance.

Figure 2.3.2

The list on the left-hand side of the window contains all of the modifiable UI elements. When an item is selected, its colour can be adjusted via the colour controls on the right-hand side of the editor.

You can filter the list of UI elements by typing part of the name into the text box just below the list. For example, if you type "button" into that space, the list will update to show only elements that contain the word button. You can clear the text box to gain access to all elements once you are done.

Colour changes generally affect the user interface in real-time, so you can see the impact your changes are having, as you work. If you find user interface elements that do not update in real-time, switching back and forth between tabs will show the changes.

Tracktion also ships with some preset colour schemes. You can access these from the "**preset schemes**" button. In addition to providing some great alternatives to the default Tracktion look, you may find it useful to look through these to get a feel for how the editor can be used to customise Tracktion.

The colour box: The top-tight hand side of the colour editor shows the current colour, and the hexadecimal value for it.

The saturation/lightness selector box: The large square region allows you to adjust the colour shade of the selected element. Click on the region that matches your desired shade to select it.

The hue selector: The vertical hue selector strip is used to pick a base colour. If, for example, you wanted a light yellow colour, click on the yellow region of the hue selector bar, and use the saturation/lightness box to create the specific shade of yellow you have in mind.

Red: You can use this control to adjust the red content in the colour. In addition you can enter a red value as a hexadecimal number.

Green: You can use this control to adjust the green content in the colour. In addition you can enter a green value as a hexadecimal number.

Blue: You can use this control to adjust the blue content in the colour. In addition you can enter a blue value as a hexadecimal number.

Alpha: The alpha value controls how “opaque,” or transparent, the colour is. An alpha value of zero would effectively make the selected element invisible. Correspondingly, setting the alpha slider to the far right (value “FF”) would produce a solid colour that completely hides elements beneath it. To see some of the selected element’s background “through” the element, choose an alpha value somewhere between these two extremes.

The palette section: Below the colour chooser controls there is a palette tool from which you can quickly call up colours. Clicking on any of the palette squares display a pop-up menu (Fig. 2.3.3). You can choose to assign the palette colour to the selected UI element, or alternatively replace the palette colour with the UI element’s colour.

Figure 2.3.3

Load colour scheme...: Load a previously saved colour scheme. When this button is clicked, a standard file-requester dialogue-box will be shown. From this box you can navigate to a previously saved colour-scheme file on your hard-drive.

Save colour scheme ...: Save the current colour scheme. When this button is clicked, a standard file-requester dialogue-box will be shown. from this box you can select a file-name and a path under which to save your colour scheme. Changes made to the colour editor are remembered between sessions, but it is still a good idea to save your scheme.

Preset schemes...: Click this button to access a collection of preset colour schemes.

Undo: If you edit an element’s colour, but are unhappy with the result, you can use the undo button to return the element back to the pre-edit colour.

2.4 : Plug-Ins

Settings related to 3rd party plug-ins can be managed from the plugins group on the settings page (Fig. 2.4.1).

Figure 2.4.1

The top of this page is dominated by a large list which shows all currently installed plugins and some information about them, such as their type, the number of inputs and outputs they support, their version number, and a category such as ‘synth’ or ‘effect’.

Below the list is a button marked ‘scanning and sorting...” through which you can instruct Tracktion to search for new or updated plug-ins. When clicked this button will present a popup menu with the following options:

Clear list: This option will remove all installed plug-ins from the list. The plug-ins themselves wont be uninstalled, this simply tells Tracktion to ignore them.

Remove selected plug-in from list: Individual plugins can be removed from the list by selecting them and choosing this option (you can also hit the DELETE key when a list item is selected).

Show folder containing selected plug-in: This is a handy way to on your hard-drive a plug-in is physically installed.

Remove any plug-ins whose files no longer exist: If you uninstalled plug-ins or deleted a directory of plug-ins you can use this option to have Tracktion detect and remove them from the list.

Sort alphabetically / by category / by manufacturer: These three options allow you to adjust how the list above is sorted.

Scan for new or updated Audio Unit plug-ins: This option is only available for Macs. When clicked Tracktion will search for any installed Audio Units and add them to your list.

Scan for new or updated VST plug-ins: Selecting this option presents a dialog window in which you can add VST search directories. Typically this will contain the correct path to your plug-ins, and you can simply click the ‘**scan**’ button, but if you have installed plug-ins to custom paths, you should add those directories to the list before clicking ‘scan’.

Below the “**Scanning and Sorting**” button, you will also find the following three options:

Always check for new plug-ins at start-up: This option sets whether Tracktion should look for new plug-ins when starting up. When disabled, you will need to initiate a manual rescan after installing new plug-ins. Tracktion may open faster when this option is disabled, however.

Enable Rewire: Selecting this option activates support for ReWire applications, if any are installed. Chapter 3.4 discusses using ReWire applications with Tracktion.

Add low level noise to avoid denormalisation: Denormalisation happens when processors are required to process numbers that are two small to work with in an optimal manner. Typically numbers need to be extremely small to cause a processor to denormalise, but different processors have different thresholds though, and certain Pentium 4 processors have a much higher than usual threshold. Often these low numbers occur when processing the tails of reverbs, and delays, as the values used to represent audio become increasingly small as the reverb/delay tail decays. If you notice that your CPU usage tends to spike unexpectedly at certain points in an edit, even if there seems to be little going on at that point, this is probably denormalisation. The best approach if you experience denormalisation is to determine which plug is causing the spike by isolating them one by one, then contacting the plug-in developer. This option can sometimes help though, as it adds a small amount of noise that serves to raise the values representing the low level audio over the threshold of denormalisation.

2.5 : Loop Settings

Settings related to your loop libraries can be managed from the loop settings group on the settings page (Fig. 2.5.1).

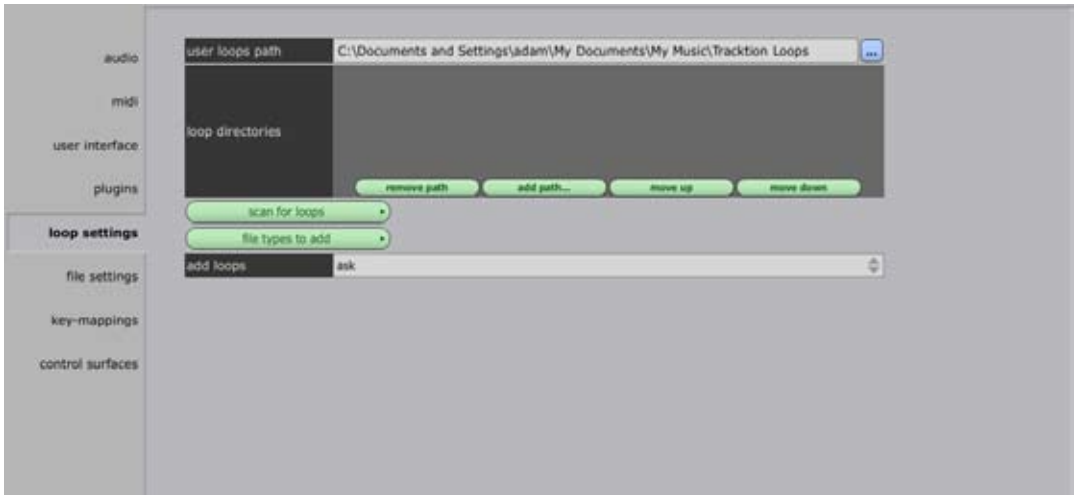


Figure 2.5.1

User loops path: When you create your own loops, they will be exported to the path specified in this field.

Loop directories: For Tracktion to be able to categorize your loop files, it needs to know where they are located. This list shows the directories in which Tracktion expects to find loop files. These directories, and all of their sub-directories, are searched for loop files. You can double-click on entries in this list to edit them. In addition you can also add and remove entries in this list with the buttons below:

Remove path: Click this button to remove a path entry from the search list.

Add path..: This option allows you to add a new path to the search list. When this button is clicked, Tracktion will display a **browse for directory** dialogue box. Navigate to your loop files directory, and click “OK.”

Move up / down: These buttons allow you to adjust the order in which directories are searched. Directories at the top of the list are searched first.

Scan for loops: Searching for loops can be a slow operation, so it is necessary to manually notify Tracktion that it needs to update its loop library. If you have added new loops to your loop libraries, or if you have added new search directories to loop directories list, click this button to refresh the library. You will be prompted whether you wish to search only for new loops, or update all loops. Typically you will want to choose the former option as it faster, but if changes have been made to loops that have been previously indexed, you should choose the scan all option.

File types to add: You can specify which file types will be included in your loops library. This can be useful if, for example, you have a large collection of wav samples that are not loops, as you could deselect the wav file type and easily exclude those samples from the loop library. As another example, you can also make your entire mp3 collection searchable from Tracktion.

New loops: If an audio file is given genre tags in the browsercomponent of the quick find panel, Tracktion will attempt to add it to the loop library. This option specifies what will happen if the file does not exist in one of the current loop directories. There are three options:

- **Import:** The file will automatically be copied into the user loops directory.
- **Add path:** The directory that contains the file will be automatically added to the loop directories list.
- **Ask:** The user will be prompted whether they wish to copy the file into the user loops directory, or add the directory containing the file to the loop directories list.

You can create custom loops and have them added to Tracktion's searchable loop library. Custom loops are discussed in Chapter 4.7.

2.6 : File Settings

Various file related settings can be managed from the **file settings** group on the settings page (Fig. 2.6.1).

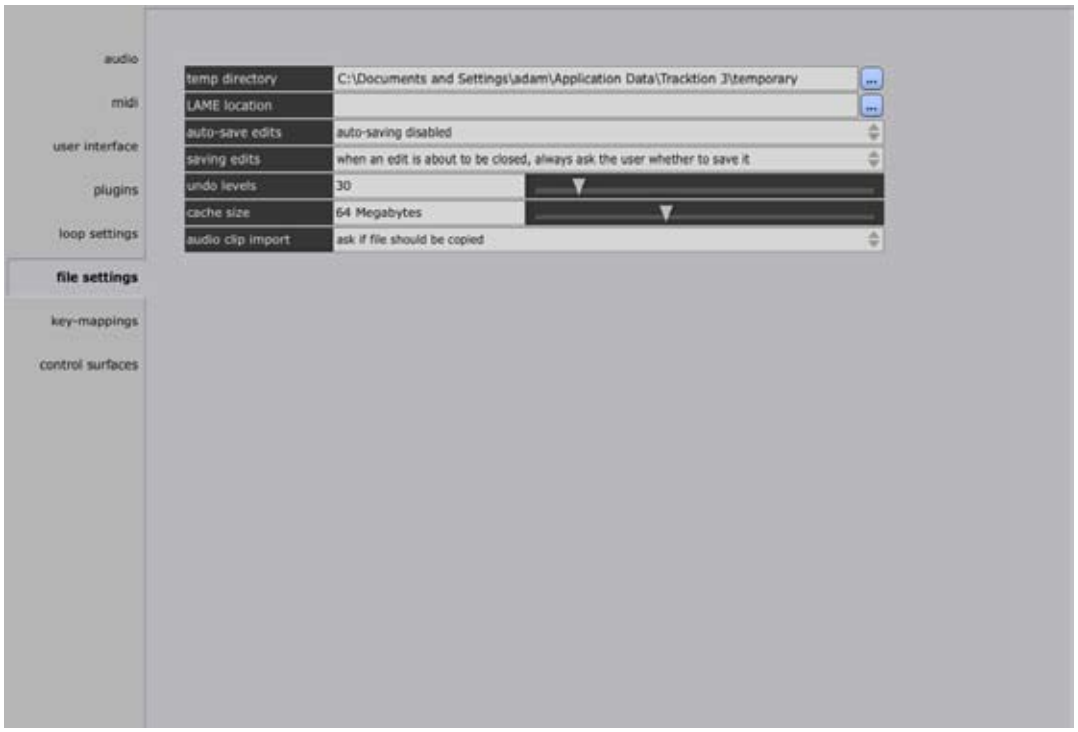


Figure 2.6.1

Temp directory: This option controls where Tracktion stores its temporary files. Typically the only time you should need to change this path is if you want to move your settings directory to another hard-drive. Changing this setting can be dangerous as Tracktion can delete the content of this directory when it closes, so do not set the path to be somewhere that contains important files.

LAME location: If you want to be able to export MP3 files from Tracktion, you will need to download the LAME codec, and enter the path to it in this box. Typically you should never need to do this by hand, as the first time you try to import or export an MP3, you will be presented with a dialogue box through which you can download the LAME codec (http://lame.sourceforge.net) and set this path.

Auto-save edits: From this option, you can specify how regularly (if at all) Tracktion will save your work.

Undo levels: This controls how many stages of undo/redo are available for the edit page. Increasing this value will allow you to backtrack through more changes, but uses correspondingly more of your computer's memory to store the change history. The default size is generally a good compromise.

Cache size: You can adjust how much of your computer's main memory (RAM) is used to cache audio files. Caching helps audio tracks play back without glitches or drop-outs, but reduces the amount of memory available to other applications and plug-ins. Making this value too large will also be counter-productive because computers become greatly less efficient once main memory is depleted. The default setting of 64MB is usually fine, but you may want to increase it if you have lots of RAM installed on your computer.

2.7 : Key-Mappings

Your current keyboard shortcut mappings can be managed from the key-mappings group on the settings page (Fig. 2.7.1).

Figure 2.7.1

Tracktion has a comprehensive range of keyboard shortcuts. Learning the shortcuts, and configuring them to your taste can greatly improve your work-flow.

The key-mappings page consist of a single list box, grouped into category types. Each line in the list corresponds to a Tracktion function. The function description forms the left-hand column, and the assigned shortcuts (if any) are shown on the right.

If you click on an existing shortcut, you will be presented with a menu, from which you can change or remove the shortcut. Clicking on the plus (“+”) symbol allows you to set, or add, a shortcut for the function. Up to three shortcuts can be created for each command.

If you choose to add a shortcut, you will be prompted to press the keys you wish to map to the selected function. If you choose a key-stroke that is already assigned to another function, Tracktion will ask if you wish to clear the existing shortcut or cancel the current operation.

Reset to defaults: This button provides the option for setting the key-mappings back to the factory default, clearing all key-mapping, or switching to key-mapping presets that match other common programs. This last option is useful if you are already familiar with another application and would like to continue using its key-mappings.

View as HTML...: This button opens a web-browser, and displays the current key-map. You can use this to obtain a printout of the key-mappings.

Save/load key-mappings...: These buttons allow you to save and recall key-maps. In addition, Tracktion ships with key-maps that match those used by other sequencers, so if you are familiar with a set of keyboard shortcuts, you may find one of these key-maps more comfortable to work with. Clicking either of these buttons will display a browse for file dialogue box.

2.8 : Control Surfaces

Installing Control Surfaces Into Tracktion

External control surfaces, such as the Mackie Control Universal, and the Novation ReMOTE series, can be managed from the **control surfaces** group on the settings page (Fig. 2.8.1).

Figure 2.8.1

Tracktion can support external control surfaces such as Mackie's Control Universal, and Control C4, devices. Many users find devices such as these are greatly faster to work with than a mouse, as they place the most commonly accessed Tracktion features right at your finger-tips, and provide a familiar, tactile, environment for mixing and editing.

The list shows the control surfaces natively supported by your version of Tracktion. If you own one or more of these devices, simply select it from the list, and select the MIDI input and output devices to which your control surface is connected (Fig. 2.8.2).

If your controller is not shown in the list, you should check whether it can emulate any of the listed devices. The Mackie Control Universal is widely featured as an emulation mode for many controllers, so there is a fair chance that your device can emulate it. If your controller can emulate a natively supported device, simply set it to emulation mode, and configure Tracktion as though you have the supported device connected.

An external controller may require a MIDI input and output pair to itself, and in such cases, MIDI leads should be connected directly from your MIDI device to the external controller.

Once the input and output devices have been chosen, the controller will be ready the moment you switch to the edit page.

This section provides only a brief overview of installing and configuring control surfaces. For detailed information, please consult Chapter Seven.

Custom Controllers

If emulation is not an option for your controller, you can still create custom controller mappings for your device. Custom controller mappings can even be used with the MIDI sliders often found in portable USB keyboards, making your on-the-road laptop experience just a little easier.

To create a custom mapping:

- Click the **add custom control surface** button.
- You will be prompted for a name for your custom map, so enter a suitable name, and click OK.
- The new map will be displayed in the list of available controllers. Select it.
- The properties panel will update to show the custom mapping.
- Select the input and output MIDI devices.
- Click the **edit control mappings** button.
- Set the mappings to suit your needs.

The properties for controllers in general, and for custom controller properties specifically are described later in this section. Also, be sure to consult Chapter Seven for more detailed information on working with and configuring external control surfaces.

Selected Controller Properties

When a controller is selected, the properties panel will display options and properties relevant to that controller. Some of these options are general to all controllers, and are shown in Figure 2.8.2. Others are specific to a given controller type. We will look at these specific options later in this section.

Figure 2.8.2

Input device: This field specifies the MIDI input device to which the controller is connected. In many cases, controllers will require all 16 MIDI channels to operate, and this device would therefore need to be set aside entirely for the controller.

Output device: This field specifies the MIDI output device to which the controller is connected. As with the input device, you may need to set this device aside entirely for the controller.

Colour selection: You can optionally have Tracktion highlight the tracks or filters that are in focus. This handy when using the controller to manage level, pan, and/or send levels across a number of tracks, as you will be able to see at a glance where your virtual mixing console starts, or which filter has controller focus. When this option is enabled, the colour selected in the colour strip to the right will be used to highlight focussed tracks or filters. If you have a number of different controllers, you can therefore easily differentiate between them by assigning them different colours. If this option is disabled, no highlighting will occur.

Mackie Control Universal Specific Properties

When the MCU option is selected in the list, the properties panel will display options specific to the MCU (Fig. 2.8.3). These options are in addition to the common properties described on the previous page.

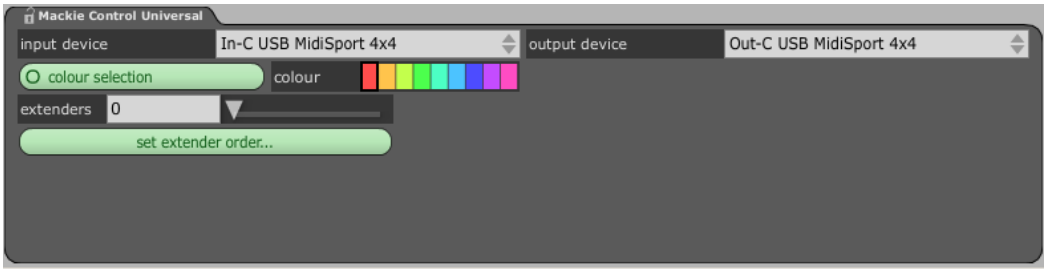


Figure 2.8.3

Extenders: If in addition to an MCU, you have one or more Control Extenders, set this field to be equal to the number of extenders you have connected to Tracktion. Tracktion currently supports up to three extenders.

Set extender order..: When this button is clicked, a dialogue box will appear where you can specify the order of your MCU and XT devices. This ensures that the faders all span naturally from left to right in Tracktion's interface. You can change the order of the devices by dragging and dropping them in the list (Fig. 2.8.4, and 2.8.5).

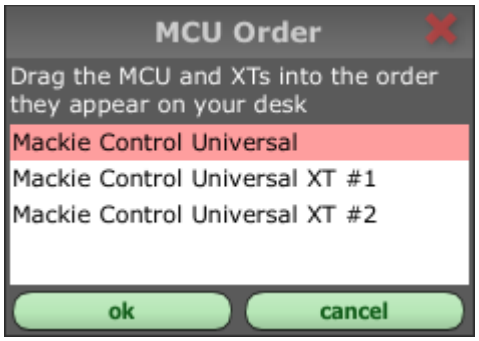

MCU Order
Drag the MCU and XTs into the order they appear on your desk
Mackie Control Universal
Mackie Control Universal XT #1
Mackie Control Universal XT #2
ok
cancel

Figure 2.8.4

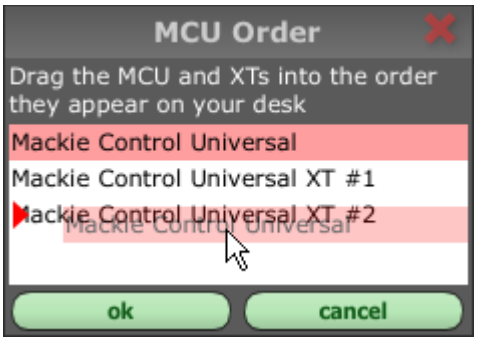

MCU Order
Drag the MCU and XTs into the order they appear on your desk
Mackie Control Universal
Mackie Control Universal XT #1
ok
cancel

Figure 2.8.5

Custom Control Surface Specific Properties

When a custom control surface entry is selected in the list, the properties panel will display options specific to custom controllers (Fig. 2.8.6). These options are in addition to the common properties described previously in this section.

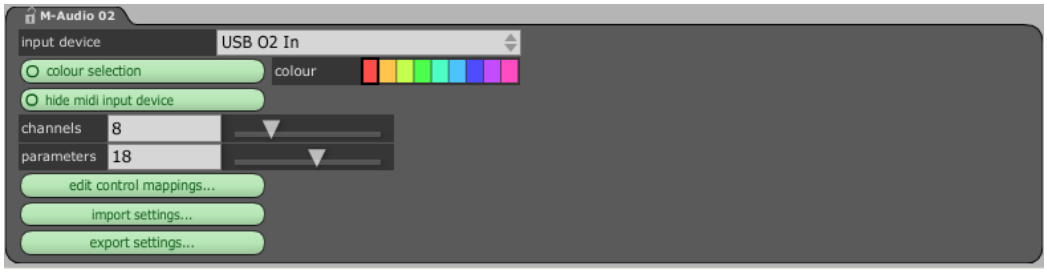


Figure 2.8.6

Hide MIDI input device: For dedicated control surfaces, there is no reason to have the input device be available as a recordable input. If your custom controller is purely a control surface device, and there are no other MIDI devices sharing the input with the surface, then you can use this option to hide the input from the available input list. If you controller is part of a controller keyboard, then you might still wish to be able to record MIDI notes, and as such you would want to leave this option unchecked.

Channels: This option specifies how many tracks your device is capable of mixing at one time, and is used to define how many tracks will be highlighted if the **colour selection** option is enabled.

If you are not using your controller as a mixer device, i.e., you are using it only to control the transport functions, or VST plug-ins, then you may want to set this value to zero.

Parameters: This option specifies how many plug-in parameters can be manipulated at one time on your controller. If you have eight unused rotary controls on your device, for example, you could set this value to eight.

Edit control mappings: This option displays a control mapping screen, where you can link the sliders, buttons, and rotary controls on your device, to functions within Tracktion. The mapping screen is described on the next page.

Import/Export settings: You can import and export custom controller configurations, either to share with others, or to make copies for safe keeping when doing backups.

The Edit Control Mappings Window

Figure 2.8.7 shows the controller mappings window. The mapping editor is made up of two columns. The left-hand column shows mapped MIDI controllers, and the right-hand column shows the function currently mapped to the controller.

To create a new mapping, click the box labelled **click here to choose controller** in the controller column. You will be prompted to move the controller you wish to map. Adjust the controller and Tracktion will detect it. Once the controller is chosen, Tracktion will create a new entry in the list. Now you can click the parameter box and choose a parameter from the pop-up menu. Chapter 7.4 describes creating custom control surfaces mappings in detail.

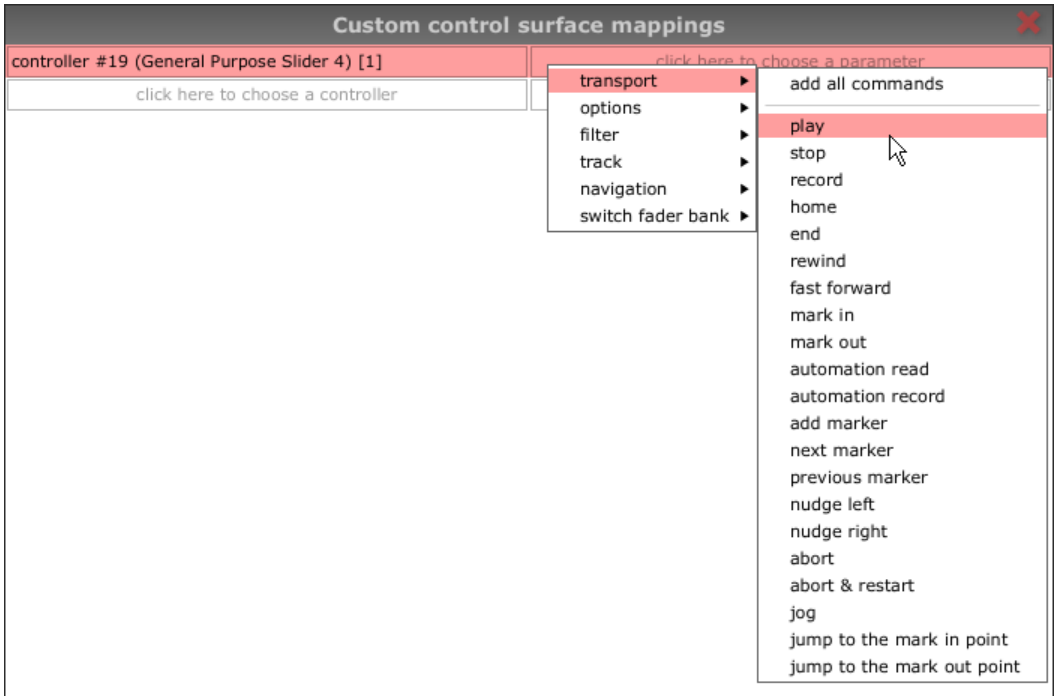


Figure 2.8.7

Chapter 3: The Edit Page

Chapter Contents

3.1 : An Overview
3.2 : The Quick Find Panel
An Overview
The Browser Mode
The Loops Mode
The Markers Mode
The Clipboard Mode
3.3 : Working With Tracks
A Quick Overview of Tracks And Clips
Manipulating Tracks
Folder Tracks
Navigating Around In The Arrangement Area
The Track Properties
Multiple Selected Track Properties
Folder Track Properties
3.4 : The Filter Section
A Brief Overview Of Filters And The Filter Section
Adding, Copying, Moving, And Deleting Filters
The Right-Click Options
The Mute / Solo Buttons
The Volume / Pan Filter
The Level Meter Filter
The 4-Band Equaliser
The Tracktion Sampler
The Aux Send / Return Filters
The ReWire Filter
3.5 : The Control Section
3.6 : The Transport Section
The Main Transport Section Controls
The Master Filter Section

3.1 : An Overview

The edit page is where you compose, arrange, and mix your songs. Before we look too hard at any specific parts of the edit page, let's take a moment to get acquainted with the basic layout of this page.

Figure 3.1.1 shows the edit page, almost as it might appear when you first enter an empty edit.

Figure 3.1.1

To help you identify the various components that go to make up the edit page, each will be introduced below.

At the very top left of the edit page, directly under the projects tab, there is a show/hide control (Fig. 3.1.2) for the **quick find panel**. When this button is enabled, the quick find panel will be visible on the left hand side of the edit page. In addition, a small drop down selector box will be visible to the immediate right of the show/hide button. Try toggling this button; note how the left panel is alternately hidden, and exposed, when you do so.

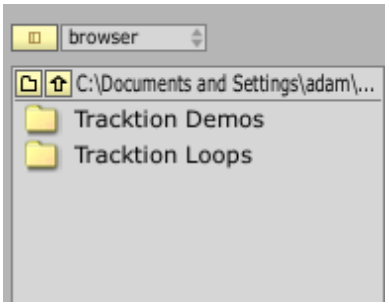


Figure 3.1.2

The quick find panel provides rapid access to a number of useful tools, such as a file browser, the clipboard, and a powerful loop browser. With the quick find panel visible, try selecting the various options in the drop down selector box. As you do so, the appearance of the quick find panel will change. We will look at the quick find panel, and these various modes in more detail later in this chapter.

To the right of the quick find panel, you will see a vertical strip that contains the names of tracks, as well as a collection of arrow shaped icons (Fig. 3.1.3). This section is called the **input section**. From this section you can select and manage tracks. In addition, you can assign inputs to them ready for recording.

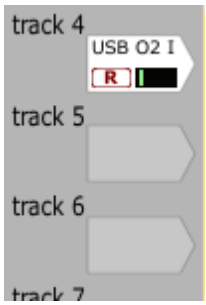


Figure 3.1.3

You will learn about working with the track name aspect of the input section in Section Three of this chapter. The recording inputs are discussed in Chapter Five, which details recording with Tracktion.

You can temporarily hide the input icons when not in use, for example during mixing. We will look at the component that allows you to show, or hide, user interface elements next.

Directly below the minimize/maximise/close buttons at the top-right corner of the Tracktion window, you will see a cluster of toggle buttons (Fig. 3.1.4). These buttons comprise the **show / hide section**, and they provide an easy way to hide areas of the Tracktion display that you are not currently using. Temporarily hiding areas allows you to maximize the amount of screen space available to you for mixing and arranging.

Figure 3.1.4

The **global** button toggles whether the global track, used for showing tempo, and key changes, is visible. If you toggle this button on, you will see a track located above the all other tracks. This track is the global track, and we will learn more about it when we come to look at tempos and the time-line. For now, just be aware that it can be hidden when you do not need it by clicking the **global** button.

The **marker** button has a very similar role to the **global** button described above. When it is toggled on, a special marker track will be visible at the head of the track list. This marker track is used to insert event marks into the time-line. Typically markers would be used to flag chorus, or verse sections of a song, which can aid visual navigation of an edit. We will look at the marker track, and markers more closely in Chapter Six.

The **show inputs** button is located just to the right of the **global** button. This button allows you to toggle whether the input device icons are shown in the track name and input section.

The **racks** button controls whether the rack editor is visible. Racks, and the rack editor, are described in Chapter Nine.

The **show filter section** button is the right-most of the top four buttons. This button collapses the entire filter section, creating a great deal more room for tracks. This can be particularly handy when working on arrangements, when it can be useful to see a great deal of the song at one time.

The **show bottom section** button is the last button in this section. It is the large horizontal button to the right of the **marker** button. This button hides the entire bottom section of the edit page, including the control panel, the properties panel, and the transport section. This can be handy when mixing or arranging, as more tracks can be shown on screen at one time.

To the left of the **show / hide** buttons, you can see the **new filter.. draggable**. This special icon is used to add new filters to tracks. We will look at this icon in detail in Section Four of this chapter.

The main area of the edit page is called the **track section**, or **arrangement** area (Fig. 3.1.5). This section, located more or less in the centre of the edit page, is where you will arrange your songs. It comprises of a number of horizontal tracks, each of which typically will represent a single instrument, or mixer channel.

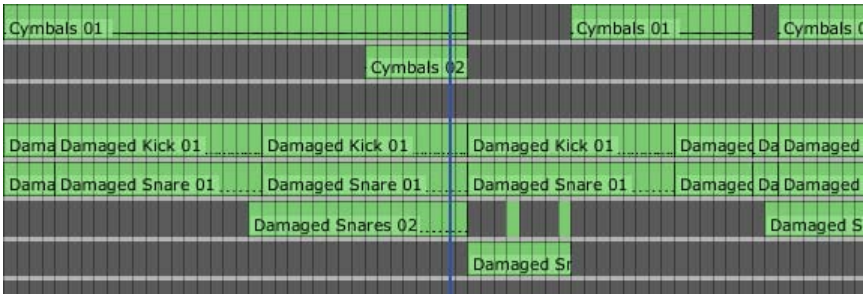


Figure 3.1.5

Fundamentally the track section serves as a basis upon which to arrange clips, which themselves can be thought of as the raw building blocks that go to make up an arrangement. You will learn how to use the arrangement area in Section Three of this chapter, and also in Chapter Four, where we will look at audio and MIDI clips.

To the right of the arrangement area you will find the **filter section** (Fig. 3.1.6).

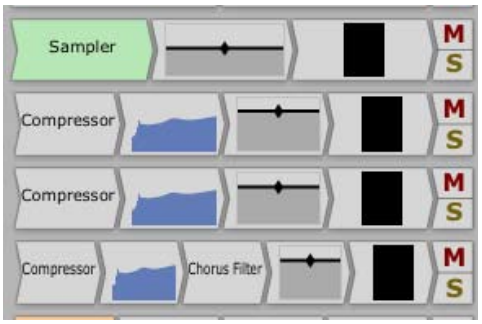


Figure 3.1.6

The filter section is where effects, treatments, and even virtual instruments, can be added to tracks.

At it's most simple, you can think of the filter section as an input strip on a mixer channel. As you will see throughout this, and later chapters, however, there is a great deal more to Tracktion's filter section than just this.

For more information on working the filter section, see Section Four of this chapter, and for some insight on how you can really unlock the power of the filter section, consult Chapter Nine, which deals with **rack filters**.

At the bottom left corner of the edit page you will find the **control panel** (Fig. 3.1.7). You may already be familiar with the control panel, as we encountered it in Chapter One. As you can see though, the range of options available to you in the control panel is greatly increased when the edit page is showing.

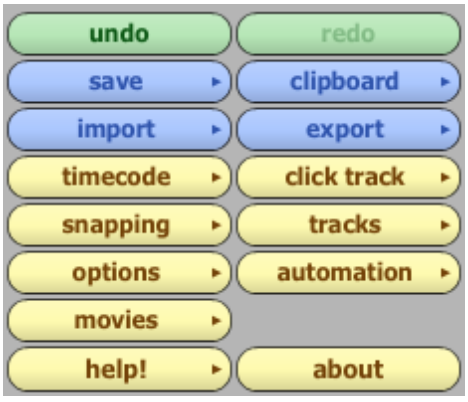


Figure 3.1.7

Most of the options available from the section are detailed in Section Five of this chapter. A few others are described in other chapters, where their function is specific to a particular topic. These are:

Import and Export: These buttons and their options are detailed in Chapter Eight.

Timecode, **Click Track**, and **Snapping**: These buttons and their options are detailed in Chapter Six.

Tracks: The options for this button are covered in Section Three of this chapter.

Automation: The options for this button are covered in Chapter Seven.

To the right of the control panel, you will find the properties panel (Fig. 3.1.8). Again, like the control panel, you have probably already encountered this section many times during the course of this manual. You may not yet have realised how fundamental this area is to Tracktion's work-flow model, however. The properties panel is a context sensitive interface that displays settings and options relevant to the currently selected item. Whenever a tool, or item is selected, this panel will display options relevant to the selection.

Figure 3.1.8

The final piece of the edit page puzzle is called the transport section (Fig. 3.1.9). It is here that you can control the playback and record status of Tracktion. In addition to the transport controls, there are a few extra options and controls available in this section. All of these options are covered in detail in Section Six of this chapter.

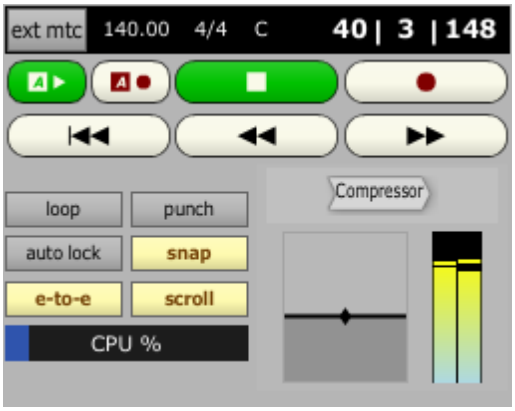


Figure 3.1.9

3.2 : The Quick Find Panel

An Overview

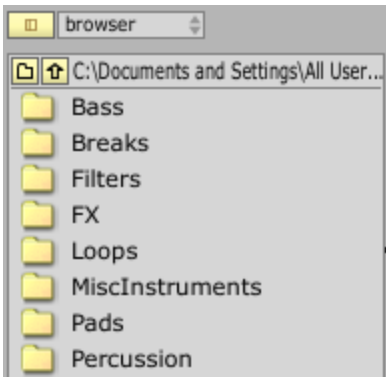


Figure 3.2.1

The quick find panel (Fig. 3.2.1) is really four tools in one, and we will look at each of those tools in turn in this section.

To display the quick find panel if it is not already visible, click the **show / hide** button (Fig. 3.2.2).

Figure 3.2.2

When the quick find panel is visible, a small drop down selector box to the right of the **show / hide** button allows you to select one of the four quick find modes.

The four modes available are:

Browser: The browser mode displays a directory and file browser that allows you to quickly navigate through your various disk, and network drives to find content for an edit.

Loops: The loop browser is a powerful tool for cataloguing and accessing the loops stored in your loop libraries.

Markers: The markers mode provides a convenient overview of your song markers. Song markers are typically used to provide bookmarks or visual clues to sections of a song, such as bridge, or verse, etc. The marker quick-find helps you navigate and manage all of your current song markers.

Clipboard: The clipboard view simply displays the current contents of the clipboard. This makes it easy to interact with the clipboard, as well as to select specific items when the clipboard contains more than one item.

All four of these modes are covered in detail throughout the remainder of the section.

The Browser Mode

When the browser mode is active, the quick find panel displays a file browser view of your hard-drive. You can use this view to quickly locate content to import into your edit.

Navigating through your hard-drive contents is simply a case of double-clicking on a folder to enter it, or clicking the up-arrow button located to the left of the folder path text box, to leave it.

The folder button at the top left corner of the browser will display a pop-up menu (Fig. 3.2.3) when clicked. This pop-up menu provides a method of bookmarking folders to speed navigation. In addition, a number of standard document folders are already bookmarked for you.

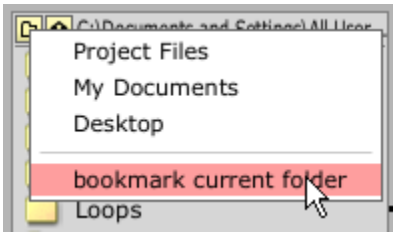


Figure 3.2.3

To bookmark a folder:

- Navigate to the folder as normal using the browser.
- Click the folder icon.
- Select the **bookmark current folder** option.

To jump to a bookmarked folder:

- Click the folder icon.
- Select the menu item that displays path you wish to jump to.

To import material into your edit from the browser:

- Navigate to the file you wish to import.
- Drag the file into your edit (Fig. 3.2.4).
- Note that as the file moves over the track area, a shadow image shows where the clip will be placed, and a speech hint located above the shadow will give the exact insert time position.
- When you have the clip located at the target insert point, release the clip.

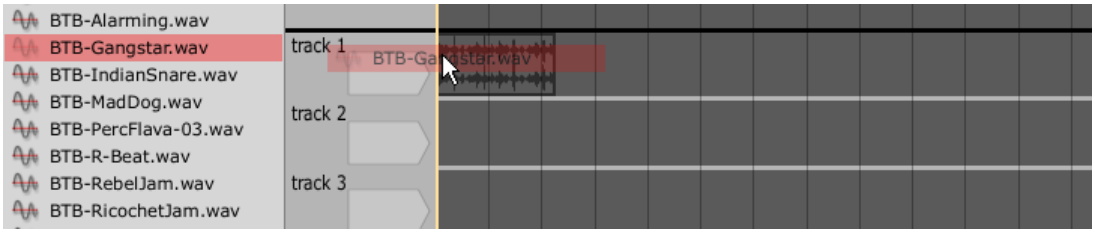


Figure 3.2.4

The browser mode can also quickly add audio files, or even entire folders of files, to your loop library. To do this:

- Navigate the file that you wish to add to your loop library.
- Right-click on an audio loop, or folder containing audio loops.
- You will be presented with a pop-up menu. From this menu, select the option **set tags**.
- Select the pop-up menu option.
- A window will be displayed where you can specify genre tags for your loop.
- Select the genre, tempo, and related tags for your loop file, and click OK.
- You will be asked whether the loop file should be copied into your loop directory, or whether the directory that contains the loop should be added to your loop library directory list. The former option will simply insert the selected file in the library, whereas the latter will add all audio files located in the same folder as the selected file.

The Loops Mode

When the loops mode is active (Fig. 3.2.5), the quick find panel can be used to quickly access your loops libraries.

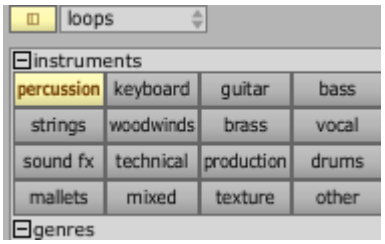


Figure 3.2.5

Loops are standard audio files that contain special information to help automatically match them to the tempo and key of a song. In addition, may loop files also contain category information, such as genre, and instrument type, that Tracktion can use to help you organize and navigate your library.

To use the loop browser, start by selecting criteria to help narrow down the list of available loops. For example, if you are looking for a percussive loop to use as a back-beat or fill-in in your edit, you could start by selecting one, or both, of the **percussion** and **drums** toggle buttons. This will immediately remove loops that are not percussive in nature, such as bass-lines, or melody hooks.

Once you have selected the instrument type, you can select other descriptive fields to further refine your search, such as genre, or style. The list of available loops (Fig. 3.2.6) will update each time you toggle one of the filter buttons. You can refine your search to filter on genre(s); instrumentation; key; and a group of descriptors, which allow you to select amongst other things, the type of groove, and mood of the loop.

Figure 3.2.6

The descriptor categories are presented in pairs, such as acoustic and electric. These pairs are naturally opposite, and as such, when one is chosen, if the other is currently selected, it will be deactivated.

The three filter sections can all be collapsed by clicking the “-” icon to the left of their name. Once clicked, the icon will change to a “+” symbol, and clicking it again will re-expose that filter group.

In addition to the filters described above, you can also directly search for a loop by entering its name, or a part of its name into the search box.

If auto-preview is enabled, you can preview one of the listed loops at any time, by simply clicking on it. You can toggle auto-preview on or off by clicking the **auto-preview** button at the bottom of the quick find panel. When auto-preview is off, loops can still be manually previewed by selecting them and clicking the **play** button, also at the bottom of the quick find panel.

The preview level can be adjusted by a slider located to the right of the play and auto-preview buttons. This control allows you to adjust how loudly the previewed loops will be heard. Previewed files are played on the default output.

The method for adding a loop to an edit is exactly the same as it is for adding material from the browser, described on the previous page.

When a loop is previewed, Tracktion will attempt to match the tempo and key of the preview to the current edit. If the edit contains tempo or key changes, the preview will perform according to the tempo and key at the current playhead cursor position. If a loop does not have suitable tempo or key information, Tracktion will simply preview it without any pitch or time-stretching.

For further information on working with loop clips, please consult Chapter Four.

The Markers Mode

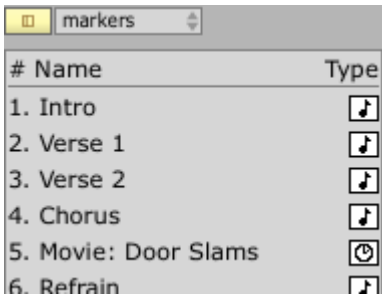


Figure 3.2.7

The markers view (Fig. 3.2.7) allows you to manage and navigate markers that you have created in your edit.

Markers are typically used to act as bookmarks for specific parts of a song, or to provide synchronisation guidelines. Tracktion allows for up to 999 markers in an edit, and you can time align markers by either beats and bars, or absolute timecode.

For example, if you were scoring music to a movie, you can use absolute timecode markers to denote important events in the video, and beats and bars markers to layout and bookmark your arrangement.

Each marker is shown as a list entry, sorted by song location. The entry shows the marker name, number, and in the right-hand column, an icon that shows whether the marker is synchronised by beats and bars, or by absolute timecode.

A button labelled “add” which is located at the bottom of the quick find panel, can be used to add new markers to an edit. You can also add new markers by clicking on the special **marker** track name, and clicking one of the two **add new marker** buttons.

A third, and particularly convenient way of adding new markers is to simply type the marker number followed by the **enter** key. So for example, to create a marker numbered 50, simply type **5**, followed by **0**, and finally followed by **enter**. As you type, the marker number will be shown in Tracktion’s titlebar, just to the left of the **minimize, maximize, and close** buttons.

When a marker is selected, a **delete** button will also be visible. This second button can be used to delete the selected marker.

Double-clicking on a marker in the list will jump the play-head cursor to that point in the edit.

Markers are explained in detail in Chapter Six.

The Clipboard Mode

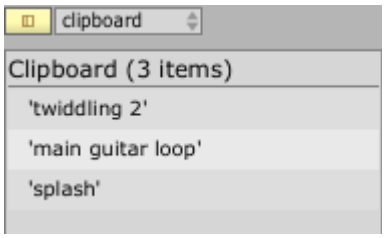


Figure 3.2.8

The clipboard quick-find (Fig. 3.2.8) view provides a convenient way to manage the Tracktion clipboard. Its behaviour is broadly similar to the clipboard view on the projects page.

Items currently held on the clipboard are shown in the list. It is possible to drag items from the clipboard list into the arrangement area. This provides a very easy method to paste items at an exact song location.

If you right-click on an item in the list, you will be presented with a pop-up menu containing the following options:

Remove Item From Clipboard: Use this option to remove a single item from the list.

Clear Clipboard: All clipboard contents will be cleared.

3.3 : Working With Tracks

A Quick Overview Of Tracks And Clips

If you look at the edit page, you can see that audio or MIDI received from an input device flows into the arrange area, and from there, it then passes into the filter section. If you were to mentally replace the arrange area with a multi-track recording device, and the filter section with a mixing console, much of what tracks are might start to make sense.

All input from external devices enters Tracktion through the input devices on the left. That signal then passes into the arrange area, where it joins any previously recorded material, ready to be passed to the filter section on the right. When the signal reaches the filter section, it passes serially from the left-most filter on the track to the right-most, being processed by each as it goes. Finally, the signal leaves the track and passes to the master outputs.

Figure 3.3.1 shows a schematic diagram of this arrangement.

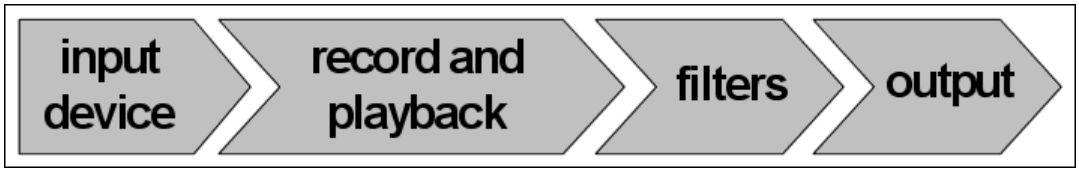


Figure 3.3.1

The main thing to take from this preamble is that signal always runs from left to right in Tracktion, and that each track is a recording device and mixer channel all in one.

Songs in Tracktion are built up from individual “clips”. These clips are placed on tracks, where they can be arranged into a composition. A clip is a container for an audio file, or MIDI data. An audio clip might contain a recorded vocal, or a guitar part, for example. A MIDI clip, by contrast, contains instructions that tell a MIDI instrument what notes to play. We will look at clips in far greater detail in Chapter Four. For now it is enough to know that tracks are the foundation upon which clips are arranged.

Manipulating Tracks

To create a new track:

- Click the **tracks** button in the control panel. A pop-up menu will be displayed.
- Select the **create new track** option from the pop-up menu.
  Keyboard shortcut: **CTRL** + **T** (**CMD** + **T** for Macs).

Sometimes it can be handy to re-order tracks. For example, maybe you’d like to keep the bass part near the percussion, or you want all of your vocal tracks to be near each other. Fortunately tracks can be re-ordered very easily.

To re-order the track list:

- Click on the name of the track you wish to move. The track will be selected.
- Drag it up or down to a new slot in the track list.
- Release it when it is correctly located.

If you want to change the name of a track:

- Click on the name of the track that you wish to rename, to select it.
- Change the name shown in the properties panel. The **TAB** key can be used to quickly highlight the name field, ready for editing.

Folder Tracks

In addition to standard tracks used for building arrangements, there is a special kind of track called a folder track (Fig. 3.3.2). A folder track is a track that can contain one or more other tracks (including other folder tracks). They are useful for grouping tracks together, and can greatly aid navigation when there are a large number of tracks in an edit.

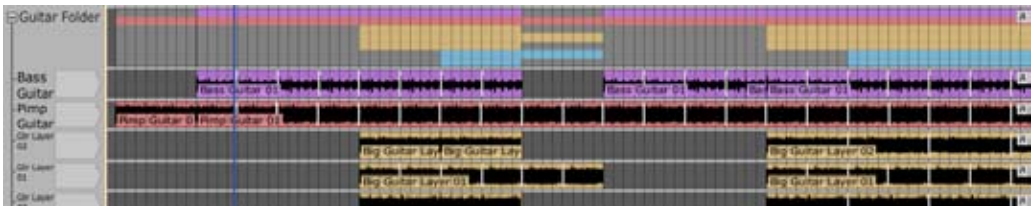


Figure 3.3.2

In addition to their ability to house other tracks, folder tracks differ from regular tracks in a number of ways. Here are a few of the more immediate differences:

- You cannot place clips on a folder track, only on tracks held inside the folder.
- You cannot add filters to a folder track.
- Folder tracks have a special VCA filter that can be used to adjust the level of all tracks inside the folder. This filter is fixed, and cannot be removed.
- Folder tracks cannot have an input device assigned to them.

Figure 3.3.2 shows a folder track that contains five sub-tracks. The top track is the folder track, and the five tracks beneath it are shown with an indented name to signify that they are contained in a folder.

Folder tracks show the contents of their sub-folders in a special thumbnail view called a **collection** clip. If you look carefully at the first track in Figure 3.3.2, you should be able to recognise the form of the five tracks beneath it. These collection clips can be manipulated just like any normal clip. This allows you to to potentially edit a number of tracks at one time, just by editing the collection clips on the folder track.

To the left of the folder track's name is a small expand/collapse icon. When a folder track is collapsed, only the folder track itself is shown. Child tracks are visible only through the collection clips. When a folder track is expanded, the folder track itself, and all child tracks will be visible.

Folder tracks can be used in many different ways. You can use them to group instruments together; for example, you could have a percussion folder in which all your percussive tracks are stored. Folders can be used to temporarily tidy away tracks that are not being used, but which you are not yet ready to delete. If you like to render tracks that require a large degree of processing power, you can keep an original copy of the pre-rendered track in a folder with its rendered counterpart. In this way, the two tracks would not take up any more screen space than a regular track.

As you can see, folder tracks provide an extremely powerful way of organizing and managing large edits, and because they can be dragged, moved, and renamed just like regular tracks, they are extremely easy to work with. You can even copy and paste them, which will copy not just the folder track, but all sub-tracks inside it!

To create a new folder track:

- Click the **tracks** button in the control panel. A pop-up menu will be displayed.
- Select the **create new folder track** option from the pop-up menu.
  Keyboard shortcut: CTRL + **SHIFT** + **T** (**CMD** + **SHIFT** + **T** for Macs).

To create a new track inside a folder:

- Click on the name of the folder track to which you wish to add a new track. The folder track will be selected.
- Click on the **insert new tracks** button in the properties panel. A pop-up menu will be displayed.
- Select the **insert 1 new track** option from the pop-up menu.
  Keyboard shortcut: CTRL + **T** (**CMD** + **T** for Macs).

To move existing tracks into a folder:

- Click on the name of the track you wish to move. The track will be selected.
- Drag it until it is located over the folder track. Note the arrow that shows where the track will be dropped (Fig. 3.3.3). The arrow should be pointing straight forward, otherwise your track will be placed either side of the folder track.
- Release it when it is correctly located.

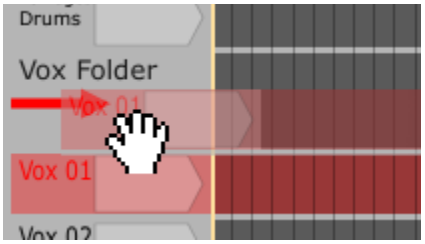


Figure 3.3.3

Navigating Around In The Arrangement Area

Now that we've looked briefly at tracks, let's move on to the arrangement area, or track section. By now you will be aware that the arrangement area is where your song will be composed and arranged. By recording, editing and placing clips, a complete song can be realized with ease. The arrangement area is basically a time-line that spans from the start of the song on the left hand side, to the end of the song at some point to the right of that. The position of a clip on this time-line therefore determines when it will play.

If you press the **play** button in the transport section, you will notice a vertical line moving across the arrangement area. This line is the play-head cursor, and it denotes the the position that section of song that is currently being heard. The play-head cursor also forms an important part of the editing process. Many functions will use the play-head cursor position to define the region on which they will operate.

If you click on the play-head cursor and drag it left or right, you will notice that it follows your mouse movements exactly. This then is one method that can be used for navigating around an edit, and for many purposes, it may be the most powerful. You can, for example, use this method for real-time 'scrubbing,' which allows you to zero in on a section of song by sound. In addition to dragging the play-head cursor however, you can also quickly relocate it just by clicking on an empty area on the arrangement area. Try clicking on any area within the track section that does not contain a clip. Notice how the play-head cursor jumps straight to the location under your mouse.

In addition to moving the play-head cursor with the mouse, you can move forwards and backwards through your edit by use of the **LEFT ARROW** and **RIGHT ARROW** keys.

In addition to the play-head cursor, you will see two other vertical lines in your edit. One has the letter "I" at the top and the other has the letter "O." These are the in and out markers and are used with a number of different editing commands, as well as during recording and rendering. They can be clicked and dragged to any position desired (Fig. 3.3.4).

Figure 3.3.4

Once an edit grows large enough, or is zoomed in far enough that it becomes necessary to scroll the screen to see it all, a horizontal scrollbar will appear (Fig. 3.3.5). This scrollbar provides a third, and extremely fast way of moving through your edit.

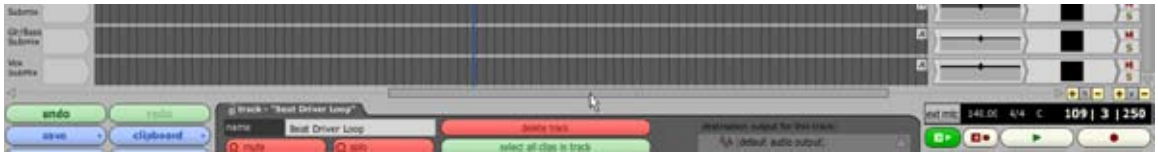


Figure 3.3.5

Tracktion allows you a great deal of control over zoom level. You can zoom into an edit far enough that you can edit audio clips at single sample precision, while also being able to quickly zoom out and see your entire edit on screen. Learning how to zoom in and out of the time-line quickly and efficiently is a big part of using Tracktion to its full potential. This section will look at a few useful tools for quickly adjusting the horizontal zoom level.

One easy way to set the zoom level is simply to use your mouse-wheel. Rotating the wheel forwards moves you into the edit, where rotating it backwards moves you out of the edit. This method is perhaps the most powerful, as with practise you can scroll and zoom in one fluid movement. Try scrolling by dragging the play-head cursor, then rotate the mouse-wheel. It can be a little confusing at first, but with a little practise you'll find you can easily control both movements at once.

Note: If you do not have a mouse-wheel, you can try dragging while the right mouse button is held down.

The horizontal scrollbar has a useful zoom tool that allows you to adjust the zoom level, as well quickly fit the entire edit into the available horizontal space. Figure 3.3.6 shows the zoom control. You will find this control located between the transport section and the filter section.

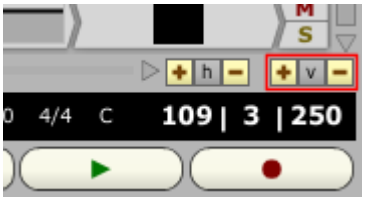


Figure 3.3.6

The plus and minus buttons can be used to incrementally zoom into out of the edit.
Keyboard shortcut: ARROW UP and **ARROW DOWN.**

The button labelled "h" will resize the edit to fit on screen, allowing you to quickly see the layout of your complete arrangement.
Keyboard shortcut: F5

In larger edits, you may find that you have more tracks than can be comfortably viewed on screen at one time. We have already seen how folder tracks can help manage large edits, but from time to time you will still need to scroll through your track list.

When there are more tracks than can be shown at one time, a vertical scrollbar will appear to the right of the filter section (Fig. 3.3.7). You can use this scrollbar to quickly scroll through the track list.

Sometimes it is easier just to fit all tracks on screen, then resize the one you are looking for. You can quickly resize the tracks to fit vertically in your available space, by clicking the "**v**" button located just below the vertical scrollbar.

Keyboard shortcut: F8

Don't forget that you can always collapse, or resize, the bottom section of the screen if you need a temporary inch or two extra of screen space to work with! To resize the bottom panel, hold the pointer over the area between the bottom and top sections. When the pointer is correctly positioned, it will change to a resize cursor. At this point, clicking and dragging vertically will allow you to resize the bottom section.

Figure 3.3.7

So far, the techniques for resizing tracks have only looked at resizing them as a whole. You can resize individual tracks however, and doing so can sometimes strike a good compromise between keeping all tracks on screen, while still being able to work on specific tracks.

The easiest way to resize a track is to use the track resize handle. To do this:

- Position your mouse pointer at the point just between two tracks. When you have the pointer correctly located, the line between them will become highlighted (Fig. 3.3.8). This line is called the track resize handle.
- With the track resize handle visible, click and drag the line up or down. Notice how the track above the line resizes.

Figure 3.3.8

This method provides a great deal of control over the final size of the track, but if you want to make the track tall enough that you can view, or edit the content inside a clip, a better approach might be to either: double-click on a clip located on the track, or double-click on the track's name in the input section.

The Track Properties

When a track is selected, its properties will be displayed in the properties panel (Fig. 3.3.9).

Figure 3.3.9

Name: This field allows you to view or set the name of the track as shown in the input section.

Mute/solo: These options allow the track to be muted or soloed. These controls are duplicates of the mute / solo controls in the track's filter section.

Solo isolate: This option toggles whether the track is in the solo isolate group. When this option is active, the track will not be muted when another track is soloed. This control is a duplicate of the solo isolate control in the the track's filter section. This is useful for tracks like reverb returns so you will still have the reverb when soloing a single track.

Freeze track: This option "freezes" the track. Freezing is discussed in Chapter Eight.

Render track: You can render the content of this track down to a single audio file. The rendering options are outside of the scope of this chapter, and are discussed in detail in Chapter Eight.

Insert new tracks: This option can be used to add new tracks, or folder tracks to an edit. New tracks will be inserted between the current track and the next track.

Insert a new clip: When this button is clicked, a pop-up menu is shown, from which you can choose the type of clip to add. The new clip will be placed on the current track. If there is a loop region set, and the **make new clips the size of the marked region** option is selected in the **options** menu, then the new clip will fill that region. Otherwise a new clip of arbitrary length will be created at the cursor point.

- **Insert new MIDI clip:** adds a new MIDI clip to the edit.
  Keyboard shortcut: **G**.
- **Insert new audio clip:** adds a new audio clip to the edit. After the clip has been created, you will be prompted for the path of an audio file with which this clip should be associated. It is usually faster to use the browser component of the quick find panel to add new audio clips to an edit.

Move track up/down: These option buttons allow you to move the track up, or down, in the track list order. You can also reposition a track in the list by dragging on the track's name.

Delete track: This button removes the track from the edit.
Keyboard shortcut (with track selected): **DELETE** or **BACKSPACE**.

Select all clips in a track: This option highlights all clips in this track.
Keyboard shortcut (with clip selected): **CTRL** + **A** (**CMD** + **A** for Mac users).

Shrink / grow: These options reduce, or increase, the vertical size of the track through four pre-set sizes: squashed, normal, large, and extra-large. The largest two sizes are especially useful for MIDI clips, as these sizes are large enough to allow for MIDI editing in the piano-roll editor.

Mute / unmute all filters: These buttons cyclically set all filters on the track to muted (disabled) or unmuted (enabled).

Auto-advance: This option sets whether Tracktion chooses an optimum value for the advance field, or whether you are instead providing a manual setting. Unless you have a very good reason to adjust this setting for a track, it is a good idea to always leave it enabled.

Advance: Sometimes in order for a track to play in synchronisation with the edit, it is necessary to introduce a timing offset to the track. Although this may seem counter-intuitive, there are lots of good reasons why this may be. For example, if external MIDI hardware tends to respond a little late to MIDI messages, you can compensate by adjusting the advance value so that this track plays a little early in relation to the rest of the edit. The **advance** value can also be used to correct for plug-ins that introduce a delay to the signal passing through them (commonly referred to as “plug-in delay compensation” or PDC). If the auto-advance option is enabled, Tracktion will compensate for delays caused by plug-ins automatically.

Insert into tracks: Clicking this button displays a pop-up menu (Fig. 3.3.10) with options for inserting material into the track.

Insert space into marked region: This option creates an empty region between the loop markers on the current track(s). All clips and automation points at, or subsequent to, the in-marker are moved to the right by an amount equal to the current marked region. If there is no marked region, this option will ap-

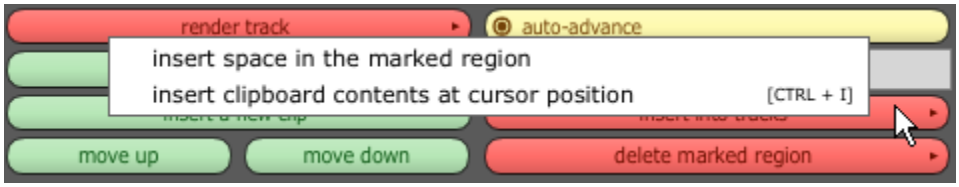


Figure 3.3.10

pear greyed-out. If all tracks are a selected, you can use this option to insert space into the entire edit, for example, to make room for an extended intro.

Insert clipboard contents at cursor position: This option places the contents of the clipboard at the current cursor position. All subsequent clips and automation points on the track will be moved accordingly. If there is no content stored in the clipboard, this option will appear greyed-out.
Keyboard shortcut: CTRL + **I** (**CMD** + **I** for Mac users).

Delete marked region: Clicking this button displays a pop-up menu (Fig. 3.3.11) with options for removing material from the track.

Clear marked region of selected tracks: This option deletes any clips contained within the region defined by the in and out markers on the selected track. Subsequent clips are not affected by this action.

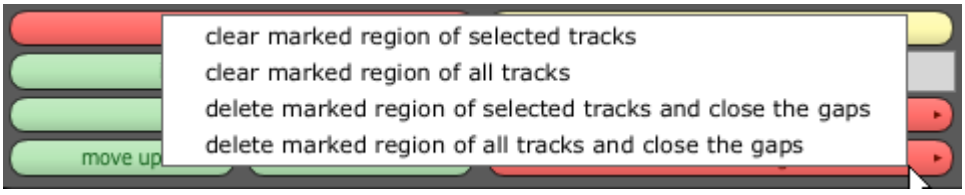

clear marked region of selected tracks
clear marked region of all tracks
delete marked region of selected tracks and close the gaps
delete marked region of all tracks and close the gaps
move up

Figure 3.3.11

Clear marked region of all tracks: This option deletes any clips contained within the region defined by the in and out markers on all tracks. Subsequent clips are not affected by this action.

Delete marked region of selected tracks and close the gaps: This option deletes any clips contained within the region defined by the in and out markers on the selected track. Subsequent clips and automation points are moved to the left by an amount equal to the current loop size.

Delete marked region of all tracks and close the gaps: This option deletes any clips contained within the region defined by the in and out markers on all tracks. Subsequent clips and automation points are moved to the left by an amount equal to the current loop size.

Destination output for this track: By default all tracks send their output to the default audio device. If you wish to have audio sent to an alternate audio device, or have the MIDI data from a track sent to external MIDI gear, click the output name to display a popup menu from which you can select the desired destination. You can also send the output of a track, or even a number of tracks, to another track to create sub-mixes and busses.

Multiple Selected Track Properties

When many tracks are selected at the same time, the properties displayed (Fig. 3.3.12) differs slightly from those of a single track.

Figure 3.3.12

Tip: To select more than one track, hold down the **CTRL** key (**CMD** for Mac users) while clicking on the track names. When the **SHIFT** key is held down, selecting two tracks will also automatically select all tracks between them.

As you can see, the majority of the settings are consistent, however, a few settings that do not make sense in the context of multiple track selections are missing, and one new button is available:

Create folder containing: This option will take a number of existing tracks and wrap them into a new folder track.

Folder Track Properties

When a folder track is selected, its properties will be displayed in the properties panel (Fig. 3.3.13).

The folder track properties is effectively a hybrid between the standard track properties, and the multiple selected track properties.

Figure 3.3.13

3.4 : The Filter Section

A Brief Overview Of Filters And The Filter Section

A fundamental part of bringing a song to life is the process of setting the volume of all instruments, vocals, and percussive sounds, such that the listener's attention is drawn to the sounds you wish to emphasise, while keeping other sounds clearly audible. Effects processes, such as reverb, may be used to give sounds a sense of position and space. Treatments, such as compression, may be used to give sounds punch or weight without making them too loud. A little EQ can be used to boost the bass of a kick drum, or maybe roll a little treble off of an overly bright piano. Tracktion allows you to do all of these things, and much more. Fundamentally, mixing is all about levels, and Tracktion makes this very easy.

The process of mixing is performed by adding one or more filters to a track, and adjusting the parameters of that filter to achieve the desired result. So what is a filter? In Tracktion terms, a filter is any effect, or instrument, that can be inserted, or 'plugged', into the filter section. The terms filter and plug-in within this context are interchangeable.

When a track is first created it will by default contain a volume / pan filter, and a level meter (Fig. 3.4.1).

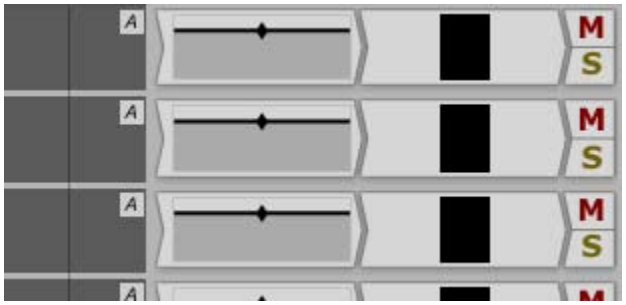


Figure 3.4.1

The volume / pan and level meter filters are the tools you will use for setting track levels. In this way, the filter section of each new track can be seen to represent the functionality of a classic mixing console.

When a filter is selected, the properties panel will display a range of options. Many of these options are common to all filters, but some will be specific to the selected filter type. In some cases filters will also display a floating window, with a custom user interface. You will learn a little more about filter properties over the next few pages.

Before we move on though, one useful trick that is worth briefly mentioning is that you can select multiple filters at once by holding down the **SHIFT** key while clicking on filter icons in the filter section. When a number of filters are selected, some options, such as enable/disabling a filter, can be applied to all of them at once. This is useful if you want to quickly silence a number of plug-ins, perhaps to perform an A/B test. Many Tracktion native filters, such as the volume/pan filter can also have parameter changes applied to all selected clips. If clips of differing types are selected, typically only the options to delete, and enable/disable filters are available.

Adding, Copying, Moving, And Deleting Filters

Tracktion's filter section follows a logically intuitive insert approach. Each filter processes the signal it receives in some manner then passes the processed signal on to the next filter in line. The arrow shape of the icon helps to show the direction in which the signal is passing.

Adding another filter to a track is just a case of inserting it into the chain at a suitable location. What is suitable? Well, you may want to add chorus to a guitar before compressing it, but want the delayed sound to reflect the post-compression guitar. In this case, you would simply line the filters up in the order of: chorus, compression, delay.

To add a new filter, drag the icon labelled "new filter..." that is located just above the filter section, and drop it where you want the new filter to be placed. Figure 3.4.2 shows a filter being added to track one. Notice that the area in front of the volume / pan filter is glowing red; this is how you can tell where the filter will be placed. If there is no illumination then you are not currently over a valid target area.

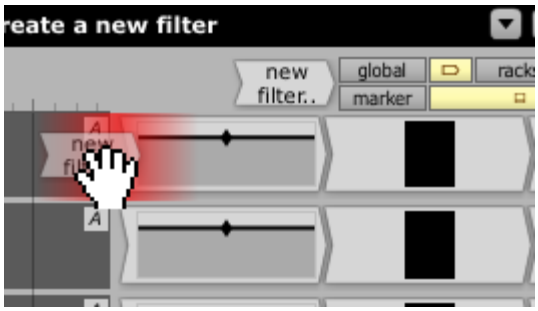


Figure 3.4.2

Once the new filter... icon has been dropped, a list of available filters will appear. Choose from this list, a filter you wish to add to the track.

A filter can be easily removed from a track by selecting it, and pressing either the **DELETE** or **BACKSPACE** key.

You can alter the order of the filter list, or even move a filter to a different track, by a simple drag operation.

Holding down the **CTRL** key (**CMD** for Mac users) while dragging a filter will create a copy of it. The copy will be created with identical settings. This can very handy when creating stereo effects, as you can have filters with slightly different settings for each stereo channel. This trick can, if used carefully, pleasantly widen the stereo image of a sound.

The Right-Click Options

If you right-click on a filter, you will be presented with a pop-up menu (Fig. 3.4.3) with the following options:

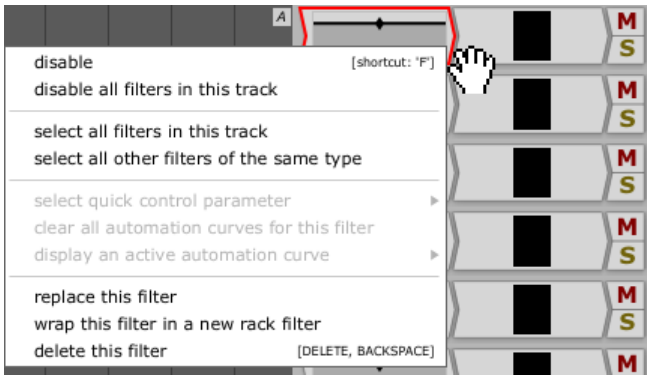

disable [shortcut: 'F']
disable all filters in this track
select all filters in this track
select all other filters of the same type
select quick control parameter
clear all automation curves for this filter
display an active automation curve
replace this filter
wrap this filter in a new rack filter
delete this filter [DELETE, BACKSPACE]
M
S

Figure 3.4.3

Disable: Use this option to toggle whether this filter is active. Disabling a filter stops it from processing the incoming signal. In addition, disabled filters typically do not use CPU resources. This option is often useful for making A/B comparisons.
Keyboard shortcut: **F**.

Disable all filters on this track: Use this option to quickly disable all filters on the current track. This option is only available when right-clicking on filters that are situated in the filter section.

Select all filters on this track: Use this option to quickly select all filters on the current track. This option is only available when right-clicking on filters that are situated in the filter section.

Select all other filters of the same type: Use this option to select all filters in the edit that are of the same type as the current filter. It is useful to note that when an aux-send filter is selected, only other aux-sends that share the same bus number will be selected. In this way you can select only your reverb or chorus sends for example, leaving other sends unselected.

Select quick control parameter: You can assign a quick control parameter to a filter. A quick control parameter is a parameter of the selected filter that is shown as a slider on the filter surface (Fig. 3.4.4). You can use this slider to make quick changes to the parameter with your mouse. Some filters, such as the volume/pan filter, that already have an interactive filter surface, do not support quick control parameters. In such cases, this option will be greyed out.

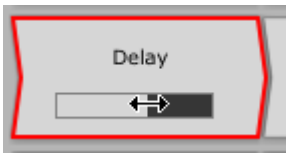


Figure 3.4.4

Clear all automation curves for this filter: This option allows you to remove all automation data for this filter. If no automation data exists for this filter, this option will be greyed out.

Display an active automation curve: If you select this option you will be show a list of active automation curves for the current filter. Select a curve from the list to have it shown on the track view. If no automation data exists for this filter, this option will be greyed out.

Replace this filter: This option allows you to select a filter with which to replace the current filter.

Wrap this filter in a new rack filter: This option will replace the current filter with a new rack filter. The current filter will be placed inside the rack, with all connections made automatically. This can be a handy way of creating racks for multiple-output VSTis. Place the VSTi on a track that you will be using it on, select this option, and then copy the new rack to other tracks as required. If multiple clips are selected on the same track (**CTRL** + Click [**CMD** + Click for Macs]), it is possible to use this function to wrap them all in a rack filter. This is particularly useful for creating pre-set channel strips, as the rack can be saved as a pre-set, which can be easily called up and unwrapped on tracks as needed. To add multiple filters to a rack in this way, the filters must all be on the same track, and must form an uninterrupted sequence. Rack filters are described in detail in Chapter Nine.

Delete this filter: This option removes the filter from the track, or audio clip it is located on.
Keyboard shortcut: DELETE or **BACKSPACE**.

The Mute / Solo Buttons

Each track has a mute / solo control, located at the far right-hand side of the filter section. These buttons can be used to temporarily silence a track, or hear it in isolation.

Clicking the “M” mute control temporarily silences a track. When a track is muted, the **mute** button will be highlighted. Mute can be used to hear a mix without a given instrument. It can be very handy when trying to locate sounds that do not complement each other. Clicking the **mute** button again, unmutes the track.

Clicking the “**S**” solo control temporarily silences all tracks but the current one. This is often useful when making changes to EQ, or compression on a track, as subtle changes may not be easy to hear when the full mix is playing. When a track has been soloed, the “**S**” button will be highlighted, and all non-soloed tracks will have a large cross shown on their mute/solo control. Clicking the solo button again, un-solos the track.

Tip: It is useful to note that when tracks are muted, any filters contained on the track will cease to use to processing power.

Tracktion has two solo modes, cumulative and exclusive.

When cumulative mode (the default) is selected, soloing a track does not un-solo currently soloed tracks.

When exclusive mode is selected, soloing a track when one or more other tracks are already soloed simply un-soloes the other tracks before soloing the current track.

The mode can be changed in the user interface group on the settings tab, and can be temporarily overridden by holding down the **CTRL**, or **ALT** keys (**CMD**, or **CTRL** for Mac users) while soloing another track.

When working with tracks that feed into other tracks, be aware that:

- Muting the destination track will effectively mute the source (sub-mix) tracks.
- Soloing the destination track will also solo all source tracks .
- Soloing a track that feeds into another track will solo both the source and the destination tracks.

To quickly clear the mute/sole state of all tracks, simply right click on any mute/solo control and select the option **reset all muted/soloed tracks**.

In addition the mute/solo options, Tracktion also supports a solo isolate mode. When a track is in solo isolate mode, it will not be silenced when soloing any other track.

To place a track in solo isolate mode:

- Right click on the track's mute/solo control. A pop-up menu will be displayed.
- Select the solo isolate option. If it is ticked, the track is already in solo isolate mode.

Note that the "S" tab on the mute/solo control now reads "SI" (Fig. 3.4.5). This is another visual hint that you can use to see which tracks have been placed in solo isolate mode.

Removing a track from the solo isolate state follows exactly the same process as turning solo isolate on.

Figure 3.4.5

The Volume / Pan Filter

This filter allows you to set the volume level and panning of a track.

Clicking on this filter will display the volume and pan settings in the properties panel (Fig. 3.4.6).

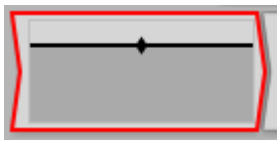


Figure 3.4.6

The first parameter shown on the properties panel is volume (Fig. 3.4.7). Try changing the volume value by dragging the slider around.

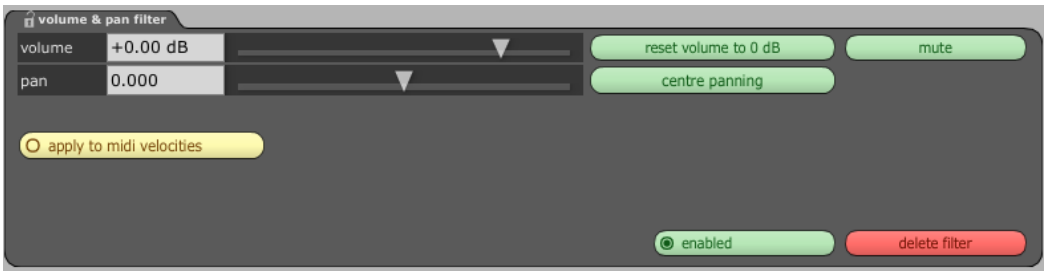


Figure 3.4.7

Watch the volume/pan filter icon in the filter section as you move the slider. Notice how the icon changes to reflect your volume adjustments. Try changing the pan value in the properties panel, and again, watch the volume/pan filter icon while doing so.

The dark horizontal line on the icon surface shows the volume, and the diamond shows the pan. This means you can see at a glance the level and panning of a given track. Even more handily, the pan and level settings can be adjusted directly from the surface of the filter icon. To change the pan, for example, just click on the diamond and move it left and right. Figure 3.4.8 shows the volume/pan filter when the mouse is moved over the filter surface.

Figure 3.4.8

Notice how the surface changes colour and the mouse-pointer becomes an up / down arrow in the first image. This shows that the volume/pan filter is in level editing mode. Click and drag the mouse vertically to adjust the volume.

In the second image, the dark horizontal level bar is highlighted when the mouse is positioned over it. In addition, the mouse-pointer has become a left / right arrow. This shows that the volume/pan filter is in pan editing mode. Click and drag the mouse horizontally to adjust the pan position.

When multiple volume/pan filters are selected, changing the volume or pan on one, will affect all other selected volume/pan filters. In particular, the effect will be proportional across all selected volume/pan filters. If you halve the level of one of the selected filters, the volume levels on the others will also be halved. This can be very handy if you want reduce or increase the level of a number of tracks while keeping their levels relative to each other constant.

Tip: Holding down a modifier key, such as CTRL whilst the mouse is positioned over a volume/pan filter switches the mouse-pointer to a four-way arrow. In this state, you can edit the pan and volume simultaneously.

The properties available to the volume/pan filter are described below:

Volume: Use this field to view or edit the current volume fader level.

Pan: Use this field to view or edit the current pan position.

Apply to midi velocities: When this option is enabled, the volume control can be used to scale MIDI velocities.

Reset volume to 0dB: Use this button to quickly reset the volume to the default level.

Centre panning: Use this button to quickly reset the pan control to centred.

Mute: This button temporarily sets the volume to “–inf.” Clicking this button again restores the volume to its previous level. This option is complementary to the main mute/solo controls in the filter section, as it is possible to automate this control if desired, whereas the main mute/solo controls cannot be automated.

Enabled: Use this option to toggle whether this filter is active. Disabling a filter stops it from processing the incoming signal. In addition, disabled filters typically do not use CPU resources. This option is useful for making A/B comparisons. **Keyboard shortcut: F**.

Delete filter: Click this to remove the filter from the track.
Keyboard shortcut: DELETE or **BACKSPACE**.

Tip: you can place as many volume/pan filters on a track as you need. This can be useful for reducing levels fed into filters (some VST plugins can distort easily). You may also find it helpful if implementing level fades; the first volume/pan filter can be automated to sweep between –inf and 0 dB to create the fade, and use the second will act as a standard track level.

The Level Meter Filter

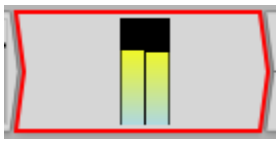


Figure 3.4.9

This filter shows the level of the signal passing through it (Fig. 3.4.9). This allows you to see at a glance how loud a given track is.

Clicking on this filter will display the properties for this filter in the properties panel (Fig. 3.4.10).

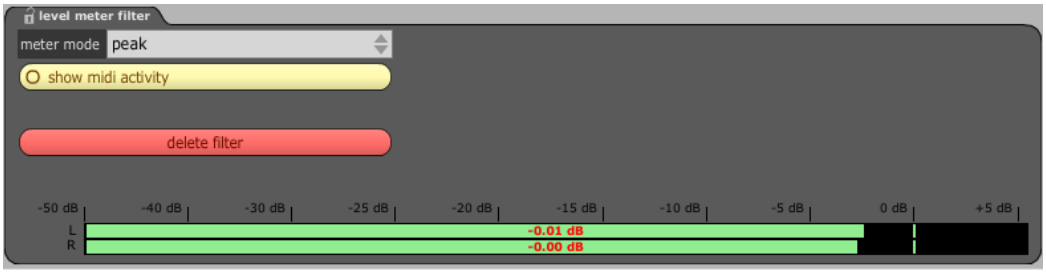


Figure 3.4.10

Level meters can also show MIDI velocities on MIDI tracks.

When a level meter clips, red bars will remain on the meter to alert you. Clicking on the meter will clear the clip warning and reset the meter.

Meter mode: This drop down is used to select the metering type for the selected level meter filter.

- **Peak:** Select this option if you want the current meter to display levels in peak mode. In peak mode the meter simply shows the highest level attained by the incoming signal. Peak is particularly helpful for spotting clipping, or sudden spikes.
- **RMS:** Select this option if you want the current meter to display levels in RMS mode. RMS mode shows the average level of a signal. Clipping may be missed when in RMS mode, but it provides a much better idea of the actual acoustic energy of a track.
- **Sum + difference:** Select this option if you want the current meter to display levels in sum + difference mode. This mode shows two levels, one is the shared stereo level, and the other is the difference between the two stereo levels. This is useful for showing stereo information. When the sum meter is high, the source has a lot of monophonic audio; when the difference meter is high, the source has a lot of different audio in the left and right channels.

Delete filter: Click this to remove the filter from the track.
Keyboard shortcut: DELETE or **BACKSPACE**.

If you right-click on a level meter, in addition to the normal right-click options for filters, you will have the chance to set the metering mode for that filter, or for all level meter filters. The modes are the same as the three described above. The pop-up menu also contains an option **reset all overloaded indicators,** which clears the clip warning on all meters.
Keyboard shortcut: \.

The 4-Band Equaliser

The four band equaliser allows you to make tonal changes to your track. It is a standard two band parametric equaliser with low pass and high pass cut-off controls.

The filter surface shows the current EQ curve for easy visual reference (Fig. 3.4.11). Unlike the volume/pan however, the filter surface of the four band equaliser is not interactive.

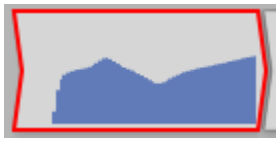


Figure 3.4.11

Clicking on this filter will display the EQ editor in the properties panel (Fig. 3.4.12).

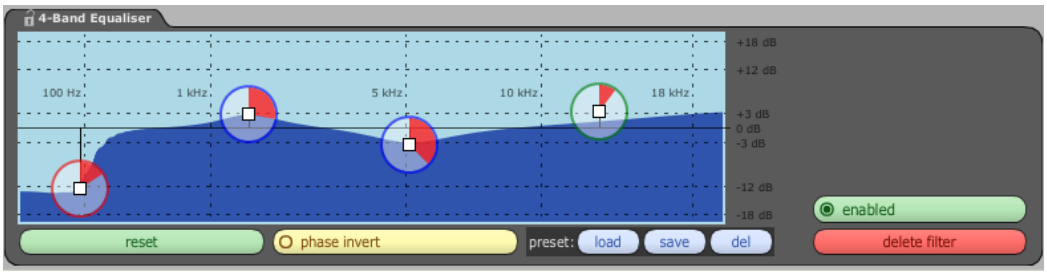


Figure 3.4.12

The large circles control the frequency, gain, and slope (Q) of the four EQ bands. Dragging the centre square left and right changes the frequency, whereas dragging the square up and down alters the gain.

The slope is depicted by the shaded segment of the circle. The larger the segment, the steeper the slope. You can adjust the slope by clicking inside the circle and dragging up and down.

Reset: This button can be used to quickly reset the EQ back to the default (flat) state.

Phase invert: When this option is selected, the phase of the audio passing through the filter will be inverted.

Preset: Use these buttons to load, save, and delete EQ pre-sets.

Enabled: Use this option to toggle whether this filter is active. Disabling a filter stops it from processing the incoming signal. In addition, disabled filters typically do not use CPU resources. This option is useful for making A/B comparisons.
Keyboard shortcut: F.

Delete filter: Click this to remove the filter from the track.
Keyboard shortcut: DELETE or **BACKSPACE**.

The Tracktion Sampler

Figure 3.4.13

Tracktion has a built-in, light-weight, sampler that, thanks to an efficient user-interface, is extremely quick to use for simple tasks, and uses very little of your computer's resources (Fig. 3.4.13).

The sampler supports key-ranges, so different sounds can be assigned to each note, but it does not support velocity layering. If you want to create highly realistic sounding instruments that change timbre depending on how hard the key is struck (velocity), you may want to use a more fully featured 3rd party sampler plug-in.

Clicking on this filter will display the sample patch editor in the properties panel (Fig. 3.4.14).

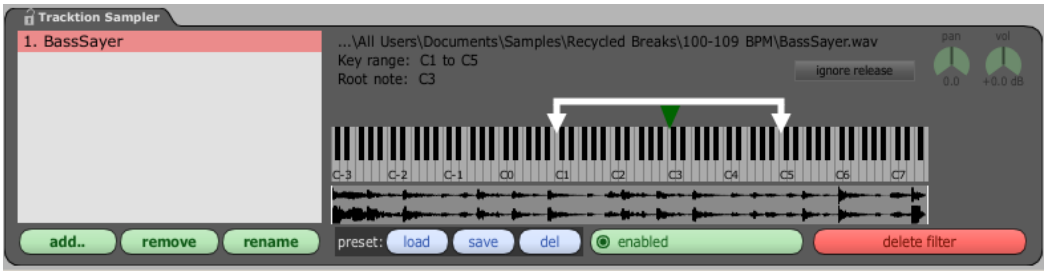


Figure 3.4.14

Samples can be imported into the sampler either by clicking the add button and navigating to the file on your hard-drive, or by dragging them into the file list box. If a sample is added to the list twice, only one copy of it is actually kept in memory.

Removing samples from the list is as simple as selecting them in the list, and clicking the "**remove**" button, or using the **DELETE** / **BACKSPACE** keyboard shortcut.

Sometimes it is desirable to define the range of keys over which a sample plays. This range is called a key-range, or key-map. To set the key-range for a sample, select the sample from the list of loaded samples. Once selected, you will see three arrows pointing down towards the piano keyboard. Two of the arrows are joined, and it is these arrows that define the key-range. Simply drag them to point to the lowest and highest keys you wish this sample to play.

If both key-range arrows are set to the same key, the sample will only be heard when that key is struck, which is useful when setting up percussive sample sets.

The third arrow, which should be shown in a different colour, controls the root-note. The root-note of a sample is the note at which the sample should play at its native pitch. Dragging this arrow down an octave will therefore have the effect of transposing the sample up an octave.

Figure 3.4.15 shows two samples loaded, each set to play across different two-octave ranges. In this case, the first sample has a key-range spread from C2 to C4, and by setting the root-note to C3, the sample will play one octave either side of its natural pitch. The second sample has a key-range spread from C-1 to C1, and by dragging the root-note to C0, this sample too will play an octave either side of its natural pitch.

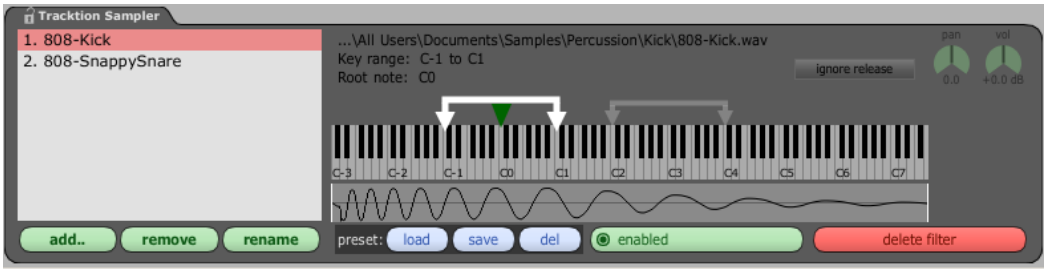


Figure 3.4.15

A drum map could therefore be created by setting:

- a kick-drum sample to have a root-note and upper / lower key-range arrow all pointing at C1
- a snare sample to have a root-note and upper / lower key-range arrow all pointing at D1
- a hi-hat sample to have a root-note and upper / lower key-range arrow all pointing at E1

Ignore release: When this option is activated, the currently selected sample will not respond to note-off events. If, for example, you had a collection of vocal phrases assigned to various keys, you could trigger them by simply playing the corresponding key on your MIDI keyboard. If this option was disabled, when you release the key, the vocal phrase would abruptly stop. Enabling this option would allow the vocal to play through the entire sampled phrase, without you needing to hold down the trigger key. **Ignore release** is commonly used with percussive sounds.

The **ignore release** option is local to a single sample.

The waveform display: The waveform display shows the current sample as a visual waveform. To trim the start of the sample, click somewhere on the left-hand side of the waveform-display and drag the mouse to the left or right. Following the same procedure at the right-hand side of waveform the display allows you to adjust the end point.

Pan: Each sample can be panned individually by selecting it in the list on the left, and adjusting the **pan** control as required.

Vol: The volume that each sample is played at can be set by selecting the sample from the list on the left, and adjusting the **vol** control as required.

The Aux Send / Return Filters

Effects loops, or auxiliary sends, are created in Tracktion by using two complementary filters, the “aux send” filter, and the “aux return” filter.

The send filter (Fig. 3.4.16) replicates the rotary send control of a mixing console, and the return filter is used to create a target for any sent audio. How this works in practise is that a track will be designated as a “return” track. This track will contain any effects to be applied to each track containing an auxiliary send.

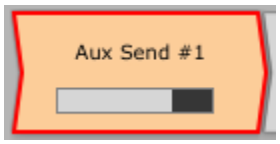


Figure 3.4.16

Tracktion’s send implementation is extremely powerful. Because you can place send filters anywhere in the filter list, you can create pre-fade or post-fade send buses by simply placing the send filter before or after the volume/pan filter for a track. Equally sends can be placed before or after any insert effects.

To set up a auxiliary return:

- Select an empty track to use as the return track. Click on its name field to select it, and rename the track with a meaningful label such as “reverb return.”
- Add any effects filters to this track that you would like to include as send effects on this send bus. Ideally the effects filters should be placed before the volume/pan filter on this track.
- Place an “aux return” filter at the start of the filter chain on the selected track (Fig. 3.4.17).
- Select the “aux return” filter, and in the properties (Fig. 3.4.18) click the **bus** drop down to select a bus. There are eight buses available. You use these buses to match send filters with their corresponding returns. For your first bus, simply choose bus #1.

Figure 3.4.17

- Also in the return properties, edit the **bus name** field to describe the purpose of this bus (for example “reverb bus”), as this will make it easier to keep track of things later.

Figure 3.4.18

Now the return track is ready to receive audio from your send tracks. To complete the picture, you simply need to add send filters to any tracks that you wish to send to your new bus:

- Place an “aux send” filter between the level meter filter and the mute/solo control on any tracks that you wish send. The send needs to be after the volume/pan filter otherwise the level of the wet effect would not stay in step with the level of the track. This is called a post-fade send.
- Select your aux send filters, and in the properties panel (Fig. 3.4.19), set the **bus** field to the bus you chose above.
- To control how much of the send effect is added to your source tracks, adjust the **send** values for each “aux send” filter. Note that the send filter icon surface has an interactive send level slider.

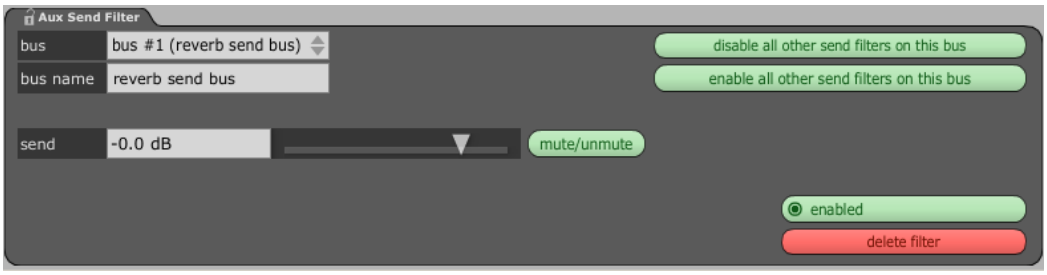


Figure 3.4.19

Enable/Disable all other send/return filters on this bus: Both the send and return filters have buttons to globally enable or disable other send / return filters that are assigned to the same bus as the current one.

The ReWire Filter

ReWire is a technology by which complete audio applications, such as sequencers, can easily be slaved to other such programs running on the same computer. Tracktion is capable of acting as a ReWire master, which means that any software that can be set to run as a ReWire slave can be used as an instrument inside Tracktion (for example Propellerhead Software's Reason and Submersible's DrumCore applications).

To use ReWire you need to enable the ReWire option in the Tracktion settings. See Chapter 2.4 for details on enabling ReWire devices.

ReWire devices are added to tracks in just the same way as any other filter. Once a ReWire device has been added to a track, it is necessary to do perform a few simple steps to use a ReWire slaved application:

Figure 3.4.20

Click the ReWire filter in the filter section (Fig. 3.4.20). The properties will be shown in the properties panel (Fig. 3.4.21).

Figure 3.4.21

Click on the "choose device" button. A pop-up menu will be shown that lists all available ReWire slave applications installed on your computer. If this list is empty, you either have no ReWire applications installed, or they are not installed correctly.

Select the ReWire application you wish to use from the pop-up menu. The properties panel will update to show the connection options for the ReWire device (Fig. 3.4.22).

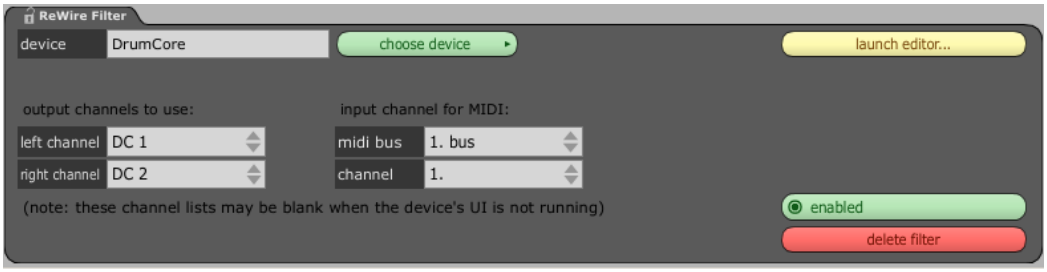


Figure 3.4.22

Output channels: Many ReWire applications offer multiple output channels, allowing you to have drums, or instruments processed and mixed separately in Tracktion. You can select which channels will be received by the current track from the left/right output channel boxes. If you wish to utilise more than one set of stereo outputs for the slaved program, you can simply add copies of this ReWire filter to other tracks, and alter these two output channel boxes accordingly.

Input channel for MIDI: You can also send MIDI data from Tracktion to your ReWire application. A ReWire application will have one or more **MIDI bus** entries available. Clicking the **MIDI bus** drop-down box will show the available buses (many ReWire applications will only offer one choice).

You can think of the MIDI bus as being broadly similar to a MIDI output device.

In addition to the MIDI bus, each ReWire filter can be assigned a MIDI channel. The MIDI channel is chosen from the channel drop-down box.

Launch editor: When this button is clicked, the ReWire application will be launched. This allows you to make edits to the material played by the ReWire device. In most cases, the ReWire application must remain open in order for you to hear audio from the device.

3.5 : The Control Section

When the edit page is showing, the control section provides a number of tools and configuration options related to working with edits (Fig. 3.5.1).

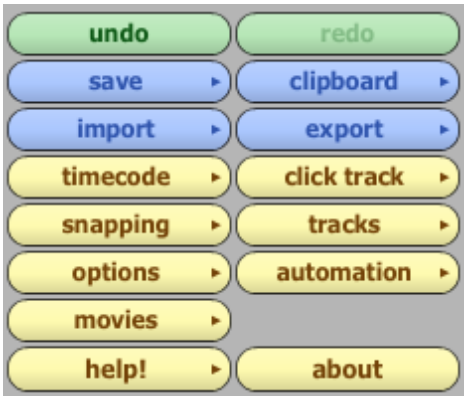


Figure 3.5.1

The configuration options available from these buttons differ from those on the settings page in that many of these options are saved with each edit. This means that when you next open an edit you have been working on, it will appear exactly as you left it.

Undo / redo: Tracktion supports multiple level undo / redo operations, which means you can step back or forwards through a number of previous actions.
Keyboard shortcut: CTRL + **Z**, and **CTRL** + **Y** respectively (**CMD** + **Z** and **CMD** + **Y** for Mac users).

Save: This button displays a pop-up menu displaying the following options:

- **Save edit:** This option saves the edit.
  Keyboard shortcut: CTRL + **S** (**CMD** + **S** for Mac users).
- **Save edit as:** Select this option if you wish to save the current edit under a new name.
- **Save edit as template:** This option allows you to create a template project from your current edit. Template projects are discussed in Chapter 1.1.
- **Revert to saved state:** When this option is selected, Tracktion will re-open the last saved version of this edit, losing any subsequent changes.
- **Open the directory containing edit:** This option open a Windows Explorer or Mac Finder window focused on the folder containing the edit.

Clipboard: This button displays a pop-up menu displaying options for working with Tracktion's clipboard. Note, some of these options are only available when a clip is selected.

- **Cut:** Select this to perform a standard "cut" operation. The selected clip(s) will be removed and added to the clipboard.
  Keyboard shortcut: CTRL + **X** (**CMD** + **X** for Mac users).
- **Copy:** Select this to perform a standard "copy" operation. The selected clip(s) will be added to the clipboard.
  Keyboard shortcut: CTRL + **C** (**CMD** + **C** for Mac users).
- **Paste:** Select this to perform a standard "paste" operation. The contents of the clipboard will be pasted after the current clip. If this option is performed a number of times, each new paste will be placed after the one preceding it.
  Keyboard shortcut: CTRL + **V** (**CMD** + **V** for Mac users).
- **Paste** (inserting at cursor position): Select this option to paste the contents of the clipboard at the play-head cursor position. If the cursor is located over this, or another clip on this track, the clip will be split to make room for the pasted material.
  Keyboard shortcut: CTRL + **I** (**CMD** + **I** for Mac users).
- **Delete:** Select this to remove the clip from the edit.
  Keyboard shortcut: DELETE or **BACKSPACE**.
- **Show clipboard contents:** This option displays the clipboard component of the quick final panel. It will also show the quick find panel if necessary.
  Keyboard shortcut: CTRL + **ALT** + **C** (**CMD** + **CTRL** + **C** for Mac users).
- **Clear clipboard contents:** This option simply clears the clipboard.

Import: This option allows you to add new material to an edit. Importing material into edits is discussed in Chapter Eight.

Export: This option allows you to export content from your edit, or export the edit as an archive. Exporting content is discussed in Chapter Eight.

Timecode: This button displays options related to tempo, MIDI, and video synchronisation. This menu is also available by right-clicking the time-line. The tempo and time-line functions are detailed in Chapter Six.

Click track: This button displays a pop-up menu with options relating to Tracktion's click-track. The click-track is detailed in Chapter Six.

Snapping: This button displays a pop-up menu with options relating to snapping and quantising. The snapping options are detailed in Chapter Six.

Tracks: This button displays a pop-up menu with options relating to tracks. Tracks are discussed in Section Three of this chapter.

Options: When this button is clicked, a pop-up menu is displayed. This pop-up menu has the following options:

- **Scroll smoothly:** By default the edit will only scroll when the play-head cursor reaches the edge of the arrange area. When this option is selected the play-head cursor will be fixed at the centre of the arrange area, and the edit will scroll continuously. This makes it easier to follow the edit visually during playback, but places extra load on computer resources.
- **Show waveform:** Use this option to enable or disable whether audio clips show waveforms, and MIDI clips show MIDI data when in shrunken state.
- **Audible trimming:** When this option is enabled, trimming operations on audio clips will be audible. This can be useful for the purposes of scrubbing.
- **Return cursor to start position when play stops:** When this option is selected, the play-head cursor will react to playback mode being stopped by returning to the point at which playback began.
- **Default MIDI editor vertical scale:** Use this option to select how many octaves are spanned when in MIDI editor mode. If you do a lot of MIDI editing by hand, you may find two or perhaps four octaves to be the best choice. Otherwise you may prefer to have a fuller range by default.
- **Make new clips the size of the marked region:** When this option is selected, new clips will be the size of the marked region.
- **Stop all playback when application is minimised:** When working across more than one application, for example using a wave editor alongside Tracktion, it is sometimes useful to have the minimise button automatically stop playback.
- **Warn about lost MIDI notes on inputs:** When this option is enabled, Tracktion displays a warning message if MIDI notes are received by a MIDI input device that is not connected to a track.
- **Show big input level meters:** When this option is selected, large level meters are shown horizontally across tracks that have inputs attached. This makes it easier to see the input levels at a distance from the screen.
  Keyboard shortcut: CTRL + **ALT** + **M** (**CMD** + **CTRL** + **M** for Mac users).
- **Mouse wheel action:** This option controls whether the mouse wheel is used to zoom or scroll in the arrange area. Note, whichever option is chosen, holding down the **SHIFT** key provides the alternate functionality.
- **Use incoming velocities for MIDI step entry:** When this option is enabled, the MIDI editor's fixed velocity will be ignored in step editor mode. Instead, the velocity of the incoming note will be used.

- **Auto show MIDI editor toolbar:** When this option is disabled, the MIDI editor toolbar will not be shown when editing MIDI clips. Figure 3.5.2 shows a MIDI clip with the MIDI toolbar visible, and Figure 3.5.3 shows the same clip with the toolbar hidden. When the MIDI toolbar is hidden, most of the tools can be accessed through keyboard shortcuts. In addition, it is possible to set a keyboard shortcut that can be used to view or dismiss the toolbar regardless of this setting. The MIDI toolbar is discussed in Chapter 4.4. The keyboard shortcut mappings and editor are discussed in Chapter 2.7.

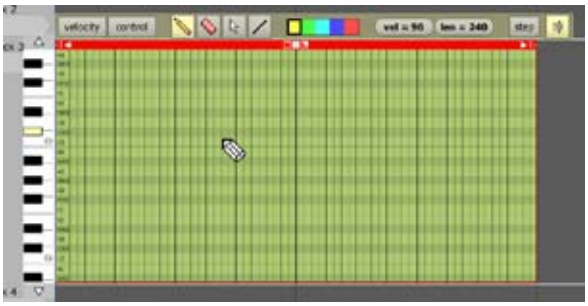


Figure 3.5.2

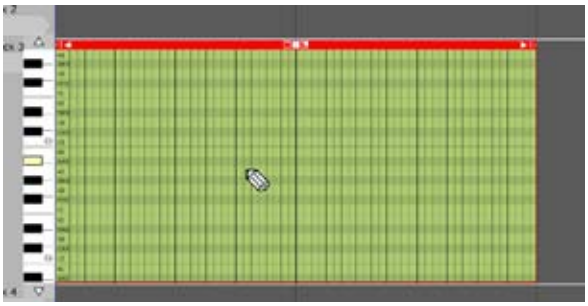


Figure 3.5.3

- **Use safe record mode:** Safe record mode requires that recording be stopped by use of a special key combination. This protects you from bringing a recording to an unintended halt by hitting the stop button, or similar. When record mode is active, and this option is selected, a message will be shown on screen with the key combination needed to stop recording.
- **Preview volume:** When importing samples into the Tracktion sampler, or into audio clips, audio files can be quickly auditioned by simply clicking on the filename. This option allows you to set a volume level to be used when Tracktion previews audio files.

Automation: This button displays a pop-up menu with options relating to automation. Automation is covered in detail in Chapter Seven.

Movies: This button displays a pop-up menu with options relating to video synchronisation. Chapter 6.7 discusses working with movies in Tracktion.

- **Show QuickTime movie window:** This option toggles whether the QuickTime window is visible. **Keyboard shortcut: ALT** + **M** (**CTRL** + **M** for Mac users).
- **Set QuickTime movie file... :** Select this option to choose a video file to display.
- **Change video start time offset:** Use this option to set the time at which the video playback should begin.If for example, the movie file has a few minutes of material before the section you are interested in, you can set the offset to a negative value. Conversely, if you want the movie to start at some point during your edit, you can set the offset to a positive value. You will be prompted to enter an offset using which ever time-line mode you are currently using. For example, if your time-line is in beats and bars, the offset value will be given in beats and bars. If you wish to set the offset using a time code different than the current, you can temporarily change the mode from the timecode button. The various timecode options are described in Chapter Six.

Help: Click this button to the access help on using Tracktion.

- **Show Tracktion help pages:** This option displays the Tracktion documentation. **Keyboard shortcut: F12**.
- **Turn on pop-up help:** When this option is enabled, hovering the mouse pointer over a control will cause Tracktion to display a pop-up help balloon describing the control. This can be handy when you are first finding your way around Tracktion.
  Keyboard shortcut: F11. A useful alternate to having pop-up help active all of the time is to use the **F10** key. This key provides a manual method of launching a balloon help prompt for the current control or component.
- **Use longer delay before pop-up help appears:** When this option is activated, Tracktion will wait a few moments before displaying the pop-up help. This setting will have no effect unless the pop-up help is enabled.

3.6 : The Transport Section

The Main Transport Section Controls

The horizontal bar that runs across the top of the transport section (Fig. 3.6.1) is called the tempo and timecode bar.

The top-left-hand corner of the transport section contains the **ext mtc** button. When this button is activated, Tracktion will begin chasing MIDI Timecode from an external MIDI device. Timecode chasing is detailed in Chapter Six.

To the right of the **ext mtc** button, you will see the current tempo, time signature, key, and finally, the play-head cursor position. You can manually alter the play-head cursor position by editing these values.

Clicking on the tempo, time signature, or key will display its properties in the properties panel. These functions are described in Chapter Six.

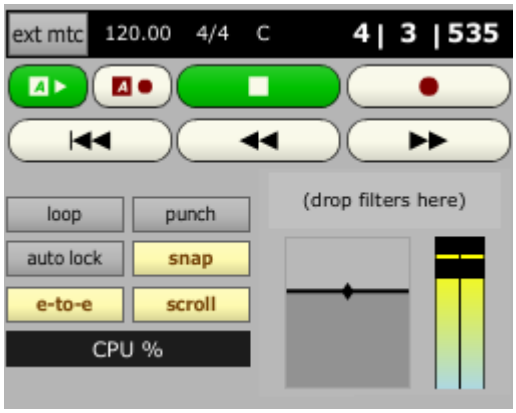


Figure 3.6.1

The two “A” buttons below the tempo, toggle automation read mode and automation record mode respectively. Automation is detailed in Chapter Seven.

Automation read: When this button is active, Tracktion will play automation curves, otherwise they will be ignored.
Keyboard shortcut: H.

Automation record: When this button is active, any changes made to automatable parameters while playback is active will be recorded.
Keyboard shortcut: Y.

The next five buttons provide standard tape-deck style play, record, rewind, backward, and forward functions.

Play: This buttons toggles whether playback is active.
Keyboard shortcut: SPACE.

Record: This button starts recording from all armed input devices.
Keyboard shortcut: R.

Rewind to zero: This button moves the play-cursor back to the start of the selected clip, or the start of the edit (whichever comes first).
Keyboard shortcut: HOME.

Rewind/fast-forward: These two buttons move the play-head cursor backwards or forwards through the edit. A single click moves the play-head to the next snapping location. Holding either of these buttons down causes Tracktion to scroll through the edit until the button is released.

The next series of buttons control various aspects related to playback and record:

Loop: When this option is active, playback will cycle through the region set by the in and out markers. If loop mode is active when recording, the record behaviour be dependent on the current recording mode. Chapter 5.3 discusses the recording modes, including looped recording mode.
Keyboard shortcut: L.

Punch: When in punch mode, recording is only active during the time that the play-head cursor is between the in and out markers. Note, punch mode cannot be used at the same time as loop mode. Chapter 5.3 discusses the recording modes, including punched recording mode.
Keyboard shortcut: P.

Auto lock: When this option is active, moving, or copying a clip on a track will automatically move, or copy, any automation points that exist within the clip's boundaries. Note that the automation does not follow the clip if it is moved to another track that does not contain the same filter. Automation and the auto lock button are described in detail in Chapter 7.3.
Keyboard shortcut: CTRL + **SHIFT** + **A** (**CMD** + **SHIFT** + **A** for Mac users)

Snap: This option toggles whether snap-to-grid is active. When snap to grid is active editing operations will snap to the nearest current grid line. Keyboard shortcut: Q.

E-to-E: This option toggles whether end-to-end mode is enabled. When enabled, Tracktion will send data to the output devices even if playback is stopped. Conversely, when it is disabled, all filters and inputs are effectively disabled.

A typical example of where e-to-to should be enabled is if you are trying to use Tracktion as an effects processor for a guitar, or hardware MIDI instrument. In this scenario, you may not want playback or record modes active, and as such you would to enable end-to-end to keep Tracktion's audio engine running.

Because end-to-end mode leaves all filters active when playback is stopped, it also means that they are using processor resources during that time. If you edit uses a large amount of CPU power, you may find that editing becomes sluggish at tines. This can happen because the filters are stealing all of the available processing power, leaving little for Tracktion itself to work with. By disabling end-to-end in this circumstance, all of your computer's processing power but be available to Tracktion for editing operations when playback stops.

The keyboard shortcut **SHIFT** + **E** can be used to toggle e-to-e mode on and off.

Scroll: This option toggles whether the edit will scroll when the play-head cursor reaches the edge of the visible area. Disabling this option can be useful when editing MIDI parts while playback is active.
Keyboard shortcut: SHIFT + **S**.

At the bottom of the transport section there is a CPU usage meter. Use this to monitor how much of your available computing power is being used by the current edit. As CPU usage increases, audio stability can be compromised, and pops and clicks may occur in recordings, and during playback. In addition, the user-interface may become sluggish and user interface updates may be noticeably slower.

You may sometimes see a small exclamation mark ("!") appear on the usage bar. This notifies you that an edit required more data to be read from your hard-drive than could physically be achieved. If you find this happening in one of your edits, you can freeze a number of the audio tracks. Chapter 8.4 discusses rendering and freezing tracks, both of which can provide methods to play edits that are either too computationally, or drive-throughput intensive.

The Master Filter Section

The final part of the transport section is called the master filter section, and it is here that you can see and edit the overall level of your edit. You can also add filters here to create a master insert section, useful for mastering plug-ins such as limiters.

To add a filter to the master section, simply drag the filter, or new filter icon, into the area directly above the master level control. A subtlety that is worth being aware of here is that if your edit sends data to multiple outputs, each output will have its own copy of the master filters. This can have two effects that may not be immediately obvious:

- All audio outputs will be processed by the filters in the master filter chain. If you are using an output as a control room mix, or vocal mix, you may not want the master effects to be applied to that track. This is particularly likely to be the case if you are using an audio output and input pair to create an insert for a hardware effects processor.

- Because the master effects on your other outputs are using their own copies of the master filters, the amount of CPU power used by the master filter section will be proportional to the number of output devices you are using. If the combined total of filters in your master filter section are using 10% of your processing power, utilising another audio output will double that to 20%, and so on. Note that this is only true when an audio output is being used by one or more tracks in the edit. Tracktion will only create copies of the master filters for outputs that are in use, so simply having an output enabled does not incur a cost.

If you only want the master effects to be applied to the default output, then you can instead use a sub-mix to create a master filter track, and leave the master filter section empty. Creating sub-mixes is described in Chapter 7.2.

When you click inside the master filter section, you will see a set of options in the properties panel (Fig. 3.6.2).

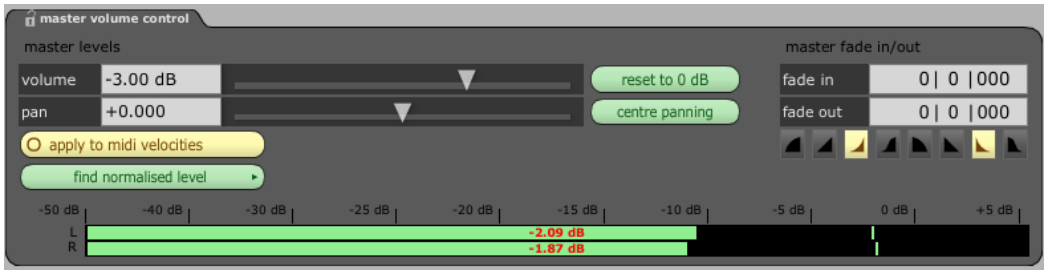


Figure 3.6.2

Volume: Use this field to view or edit the current master volume fader level.

Pan: Use this field to view or edit the current master pan position.

Apply to midi velocities: When this option is enabled, the volume control can be used to scale MIDI velocities.

Find normalised level: This option allows you to have Tracktion select the optimum master level for the edit. A pop-up menu will be displayed with the following options:

- **Based on the max level of the whole edit:** Choose this option to have Tracktion find the peak level of the edit and set the volume accordingly.
- **Based on the RMS level of the whole edit:** Choose this option to have Tracktion find the RMS level of the edit and set the volume accordingly.
- **Based on the max level of the marked region:** Choose this option to have Tracktion find the peak level within the marked region and set the volume accordingly.
- **Based on the RMS level of the marked region:** Choose this option to have Tracktion find the RMS level within the marked region and set the volume accordingly.

Reset volume to 0dB: Use this button to quickly reset the volume to the default level.

Centre panning: Use this button to quickly reset the pan control to centred.

Fade in/out: View or edit the fade envelope breakpoints for the edit. These breakpoints define the length of the fades from the start and end of the edit. For example, entering the value two in the first column of both fade fields would cause the edit to fade in over two bars, and begin to fade out two bars from the end of the edit. If fade in / out values have been given, the time-line bar will show fade curves to help you visualise the fades you have set-up. Figure 3.6.3 shows the fade curves at either side of the time-line.

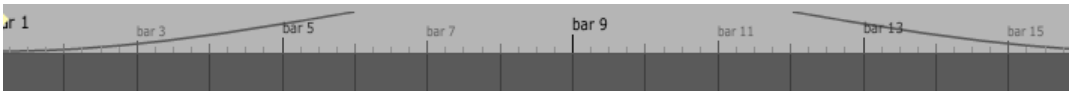


Figure 3.6.3

You can of course automate the master volume control to implement a fade, but that requires you to know in advance the final mix levels, and as such, this approach is generally far more elegant.
Fade slope: Choose the slope type for the fade in/out envelopes from these icons.

In addition, right-clicking on the level meter displays options for setting the metering response:

Use peak mode: Select this option if you want the current meter to display levels in peak mode. In peak mode the meter simply shows the highest level attained by the incoming signal. Peak is particularly helpful for spotting clipping, or sudden spikes.

Use RMS mode: Select this option if you want the current meter to display levels in RMS mode. RMS mode shows the average level of a signal. Clipping may be missed when in RMS mode, but it provides a much better idea of the actual acoustic energy of a track.

Use sum + difference mode: Select this option if you want the current meter to display levels in sum + difference mode. This mode shows two levels, one is the shared stereo level, and the other is the difference between the two stereo levels.

Reset all overloaded indicators: This option clears the clip warning from all meters.
Keyboard shortcut: \.

Chapter 4: Working With Clips

Chapter Contents

4.1 : An Overview Of Clips
Understanding Clips
The Clip Tools
4.2 : Working With Clips
Adding New Clips To An Edit
Moving And Resizing Clips In An Edit
Selecting Multiple Clips
4.3 : MIDI And MIDI Clips
Working With External MIDI Equipment
Working With Software Instruments
Software Instruments With Multiple Outputs
The MIDI Clip Properties
The MIDI Clip Right-Click Options
4.4 : The MIDI Editor
The MIDI Editor
Adding, Editing, And Deleting Notes
The Velocity Editor
Editing Controller Events
Step Entry
4.5 : Quantizing And Groove Templates
4.6 : Audio Clips
The Audio Clip Properties
The Audio Clip Right-Click Menu
4.7 : Looping Clips
An Overview Of Looping
Looping MIDI Clips
Looping Audio Clips, And The Loop Properties Tab

4.1 : An Overview Clips

Understanding Clips

When you record or import audio/MIDI content into Tracktion, it will be presented in the edit page as a clip. These clips provide tools for editing and working with your audio and MIDI parts, and are a convenient way to arrange audio and MIDI parts into a song.

One of the most useful, and most fundamental, aspects of clips is that you can edit and resize them non-destructively.

To understand what this means, lets consider an audio clip, as this immediately brings us to one important detail that should be addressed before we move on: An audio clip doesn't actually contain any audio! Instead of thinking of the audio as part of the clip, it is more accurate to imagine the clip as a window onto the audio file. What does that mean? Well, picture a piece of cardboard with a square cut out of it. If you lay that piece of card on a page of text you will only be able to see the text that is exposed by the hole, and as such, you will only be able to see a small region of the page at any one time. Here the hole can be seen to be a window, and the text you can see through it is determined entirely by the position and size of that window.

Now consider the clip to be a window, just like the piece of card. Just as the visible region of text is not part of the card, equally the audio shown in a clip is not part of the clip; it is just an individual file that the clip is acting as a window onto.

By changing the size of a clip, you can show or hide as much of an audio file as you want. Figure 4.1.1 shows an audio clip displaying just the middle section of an audio file. By adjusting the offset of the clip in relation to the audio file, you can control which part of the audio is showing through the clip window.

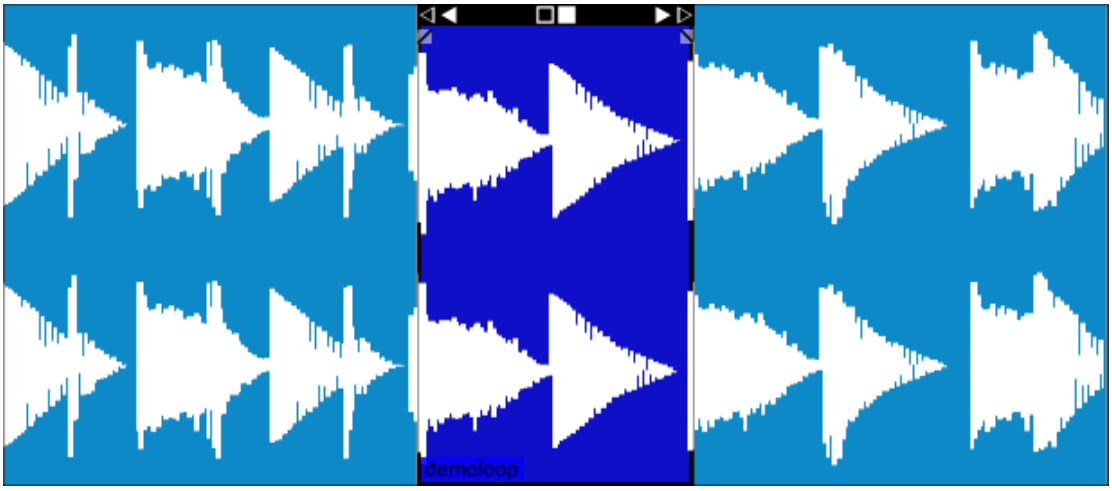


Figure 4.1.1

A single audio file may be used by many different clips in a single edit, and each clip may not only be showing different sections of the file, but even applying unique processes to it.

What "non-destructive editing" basically means then, is that splitting, trimming, and resizing clips, does not affect the underlying audio file, or MIDI data, in any way. If you shorten a clip, some of its contents may appear to be lost, but if you then set it back to its original size, the contents will still be there. In short, any changes you make to a clip's size are only as permanent as you want them to be. Not only does this provide for an extraordinarily flexible way of working, it can also bring great peace of mind when making experimental edits to audio and MIDI clips.

The Clip Tools

When a clip is selected, the title-bar at the top of the clip displays a collection of tools (Fig. 4.1.2). These tools provide powerful editing features that make trimming, sizing, and scaling clips a simple and efficient process.

With the exception of the fade tool, these title-bar tool are common to both audio and MIDI clips. They are how you define the size of the clip, and the region of the source material that the clip is displaying.

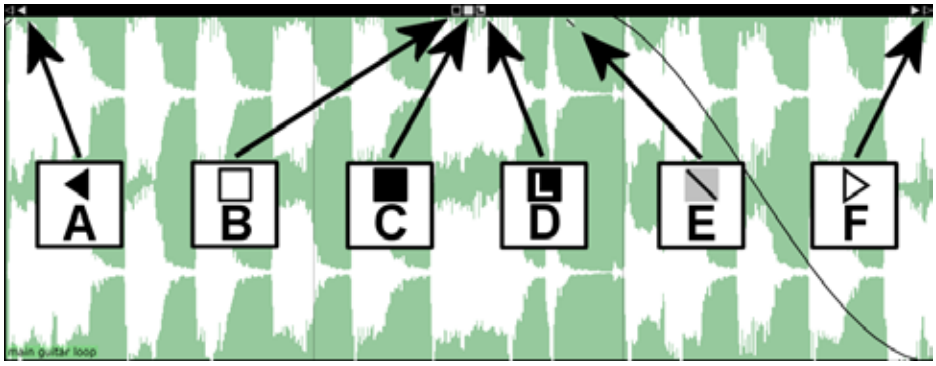


Figure 4.1.2

Looking at the tools in turn:

A: Each side of the clip has two arrow icons. The two solid arrow icons are used to resize the clip, keeping the clip contents fixed in relation to the clip edge that is being edited.

B: The centre of the clip has two square icons. The hollow square icon is used to slide the clip forwards or backwards along the time-line without moving the contents of the clip.

C: The solid square icon is used to slide the contents of the clip along the time-line while keeping the clip itself in a fixed location.

D: The “L” icon can be toggled to enable or disable looping on this clip. When a clip is in loop mode, stretching it will produce a long clip with repeated content.

E: Each side of an audio clip has a diagonal line icon. These icons are used to add volume fades to an audio clip. You can set the fade by dragging the icons across the clip. Dragging the left fade icon to the right creates a fade in period for the clip. Conversely, dragging the right side fade icon to the left creates a fade out period. The length of the fade period is determined by how far the fade handles are dragged. The shape of the fade is controlled by an option in the clip properties, and can be seen visually by the fade curve shown on the clip. These icons are not present on MIDI clips.

F: The two hollow arrow icons are used to resize the clip while keeping the position of the clip contents fixed in relation to the edit. This operation can be viewed as simply trimming the clip. If you wish to cut the start or end off of a clip without affecting the timing of the clip contents in relation to the song, simply drag the hollow arrow icons.

Note that for audio clips, unless the loop mode is active, you cannot drag the clip boundaries beyond the boundaries of the source material. Once either edge of the source material has been reached, the clip size and slide options will cease to function.

If loop mode is disabled, both audio and MIDI clips can be stretched by holding down the **ALT** key (**CTRL** for Mac users) while resizing the clip. In this case, both sides of the clip content stay fixed in relation to the clip edges.

Throughout the remainder of this chapter you will learn more about these tools, how to use them.

4.2 : Working With Clips

Adding New Clips To An Edit

There are three approaches to adding clips to an edit: The first is to create an empty clip, and add some content to it; the second is to copy or import an existing clip or item; and the third is to record them. Recording clips is described in its own chapter (Chapter Five). This section will cover only the first two methods. You will probably find that you only choose the first approach when working with MIDI clips. For completeness however, both methods will be described for both audio and MIDI material.

To create a new clip:

- If you do not already have an edit open, first open an edit ready for editing.
- Select the track upon which you wish to add a new clip.
- Click the insert a new clip button. You will find this button in the properties panel (Fig. 4.2.1).
- From the pop-up menu, select the type of clip you wish to add: audio, or MIDI.

Figure 4.2.1

If you opted to create a new audio clip, you will be prompted for an audio file to associate with this clip. Just navigate to the audio file this clip should reference, and OK the prompt. At that point you may be asked whether you want to copy the audio file into your project folder. Generally, it is a good idea to make local copies of audio media, as you can then safely make changes to the file without potentially impacting on other projects. However, if the audio file is part of a large, centralized sample library, making local copies of audio may just be wasteful of hard-drive space. Once the file is selected, your clip will be added to the selected track.

Note: If you do not receive a prompt giving you the opportunity to copy the audio file into your project, you may at some point have disabled the prompt dialogue. To re-enable it, go to the user interface group on the settings page, and set the option audio clip import to ask if file should be copied.

If you opted to create a new MIDI clip, you do not need to do anything further. Your clip will be ready and waiting for you on the selected track. Note that MIDI clips can be created quickly by using the keyboard shortcut: **G**.

Creating clips from existing material can be achieved in a number of ways; principal amongst them however are dragging files into an edit from the quick find browser, and copying existing clips within the edit.

To drag add material from the quick find browser:

- If the quick find panel is hidden, first activate it by clicking the show / hide button (Fig. 4.2.2).
- Select the **browser** option from the selection box to the right of the show / hide button.
- Navigate to the directory that contains the file you wish to import.
- Drag the file into the arrangement area. The file appears as a ghost outline when it is positioned over the arrangement area. This outline shows you where the clip will be located when it is dropped.

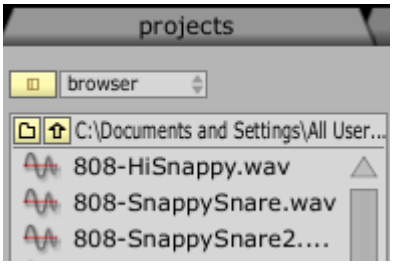


Figure 4.2.2

- When your clip is correctly positioned, drop it to finish the drag operation.
- As with the first method for creating clips, you may be prompted whether the file should be copied into the project folder, or referenced from its current location.

To help you navigate your sample and MIDI libraries more efficiently, you can bookmark directories in the quick find browser. Chapter 3.2 discusses this, and other aspects of the quick find panel.

Copying clips from one part of your edit to another is extremely easy. Here are a few approaches to achieving the same goal:

Copy / Paste:

- Select one or more clips.
- Click the clipboard button in the control section, and select copy. Alternatively you can use the keyboard shortcut : **CTRL** + **C** (**CMD** + **C** for Mac users).
- Click the location on the track where you want the clips to be copied to.
- Click the clipboard button in the control section, and select paste. Alternatively you can use the keyboard shortcut : **CTRL** + **V** (**CMD** + **V** for Mac users).

Copy dragging:

- Select one or more clips.
- Hold down the **CTRL** key (**CMD** for Mac users).
- Hold the left mouse button down over the title-bar of one of the clips. Be careful to click on area of the title-bar that is not a tool icon.
- Drag the clip(s) to a new location. Note how the clip(s) you are dragging are copies of the selected clip(s). This happens because you are holding down the **CTRL** (**CMD**) modifier key. Dragging clips without holding down this key will perform a standard move operation.

Moving And Resizing Clips In An Edit

A few moments ago, we briefly touched on moving clips by dragging them with the mouse. In addition to this, there are a few handy keyboard shortcuts for moving selected clips:

When one or more clips are selected, holding down the CTRL key (CMD for Mac users) while pressing either the LEFT ARROW or RIGHT ARROW keys will nudge the selected clips along the time-line.

When one or more clips are selected, holding down the CTRL key (CMD for Mac users) while pressing either the UP ARROW or DOWN ARROW keys will move the selected clips to the adjacent track.

In Section Two of this chapter, we looked at the title-bar tools available to clips. You may recall that the four arrow icons at each end of a clip can be used to resize it. To use these tools, simply click and drag on one of the arrow tools that is located on the side you wish to shrink / extend (Fig. 4.2.3). As you drag the mouse left and right, the clip will shrink and enlarge. When the clip is at the desired length, release the mouse button to fix the clip at the new size.

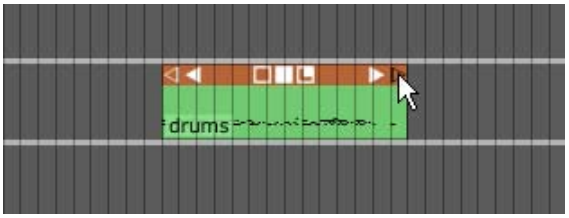


Figure 4.2.3

Whether you use the hollow or solid arrow tool is dependent on the what you are trying to achieve. Typically though, you will probably want to use the hollow (outer) arrow tool, so if you are in doubt, try that one first.

Selecting Multiple Clips

Throughout this page, you may have noticed many references to operations with more than one clip selected. If you are wondering how to select multiple clips at once, then the next few paragraphs will show you how.

If you are trying to select all clips within a certain area, you can use the lasso tool. To lasso a group of clips, hold down the **ALT** key (**CTRL** for Mac users), click and drag a rectangle around the clips you wish to select (Fig. 4.2.4), and when ready, release the mouse button, and the **ALT** (**CTRL**) key.

If you are only aiming to select a few clips, or if the clips you wish to select cannot be lassoed without capturing unwanted clips, you can instead hold down the **CTRL** key (**CMD** for Mac users), and click on each clip in turn.

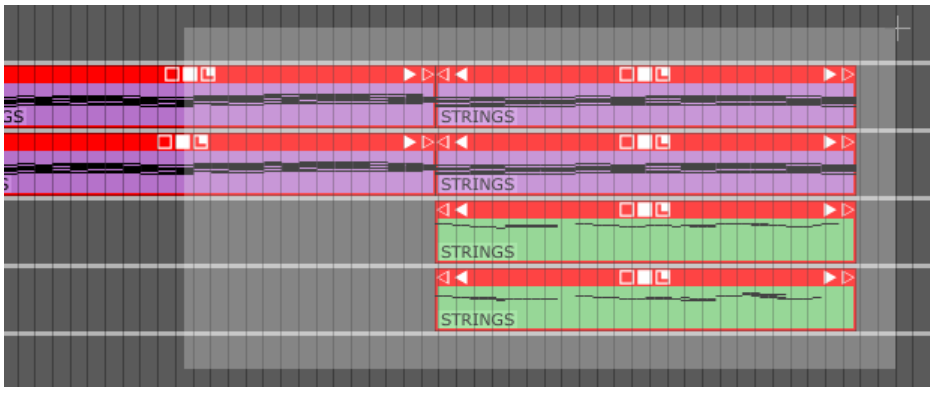


Figure 4.2.4

4.3 : MIDI and MIDI Clips

Working With External MIDI Equipment

In the next few pages we will look at how to use Tracktion to control external MIDI equipment. You will learn how to assign Tracks to MIDI outputs, and how to call up different instruments (programs) on your MIDI device by program name.

This chapter does not cover recording from MIDI, or synchronising Tracktion with external MIDI equipment. Those two topics are covered in chapters Five, and Six, respectively.

The first step before beginning your edit should always be to check that your MIDI equipment is correctly connected to Tracktion. One of the MIDI-OUT ports on your computer's audio/MIDI interface should be connected to the MIDI-IN port on your MIDI instrument or effects processor. If your audio/MIDI interface has more than one output port, make a note of which port you connected the MIDI hardware to.

Now that you have connected your hardware, open the edit in which you are planning to use your MIDI device. At this point you simply need to assign a track to the MIDI device. Once assigned, the device will receive MIDI data from any MIDI clips that you place on this track.

To assign a track:

- Select the track you wish to use as a MIDI track.
- The properties panel will display the track properties.
- In the **destination output for this track** list (Fig. 4.3.1), select the MIDI output to which your device is connected.

Figure 4.3.1

If you have some MIDI clips ready to try out, you can test your MIDI device right now. If you don't have an MIDI clips ready at this time, don't worry, we'll be looking at the MIDI editor in just a few sections time. Once you've seen how the MIDI editor works, you'll be able to edit recorded performances, and create new MIDI performances by hand.

What if you try it though and you can't hear anything? If this happens to you, most likely you simply need to change the MIDI channel that your clip is sending on. Your MIDI hardware may be configured to listen to only one MIDI channel, and if your clip is set to transmit on a different channel, the MIDI device will simply ignore it. The documentation for your MIDI equipment will tell you how to check, or alter, the channel that the device listens on; with only 16 possible channels, however, trial and error can often be just as efficient a solution.

To set the MIDI channel that a MIDI clip transmits on:

- Select the clip(s).
- The properties for the clip(s) will be shown in the properties panel.
- Set the channel parameter (Fig. 4.3.2) to the desired channel number.

Tip: Many different tracks can send to one MIDI output device, so you can assign a track to each MIDI channel for multi-timbral synthesizers.

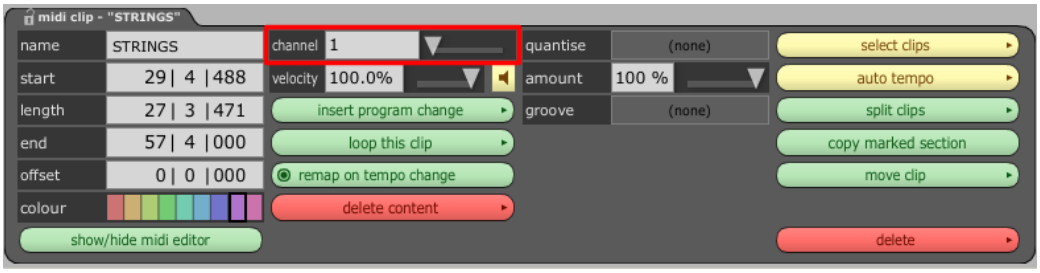


Figure 4.3.2

Note: Take care that there are no unnecessary filters on tracks used for external MIDI, as many filters do not pass MIDI data.

Once you have your MIDI device responding to Tracktion, you will probably want to set up an easy way of recalling the various presets, or 'programs' that your instrument offers. To do this:

- Switch to the settings page.
- Select the MIDI options group.
- Find, and click on the MIDI output your hardware is connected to in the list of MIDI devices.
- The properties panel will show the properties for the output.
- Click the **add** button (Fig. 4.3.3).

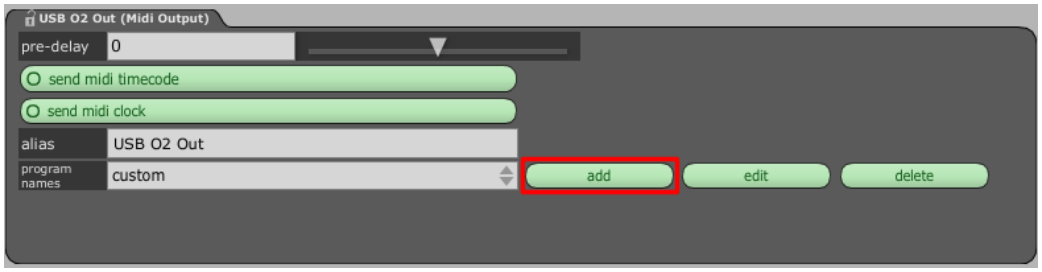


Figure 4.3.3

- A dialogue window will be appear (Fig. 4.3.4), from which you can select from a large collection of built-in preset banks, or create your own custom bank(s).

To select an existing preset bank, simply click the preset combo-box, and search for the device in the list. The name field will be automatically filled in when you select an option.

To create a new bank:

- Enter a name in the name field.
- Select <none> from the combo-box options.
- Click OK the dialogue window.
- Follow the instructions below for editing program names.

You can make changes at any time to the program names that are contained in your bank(s).

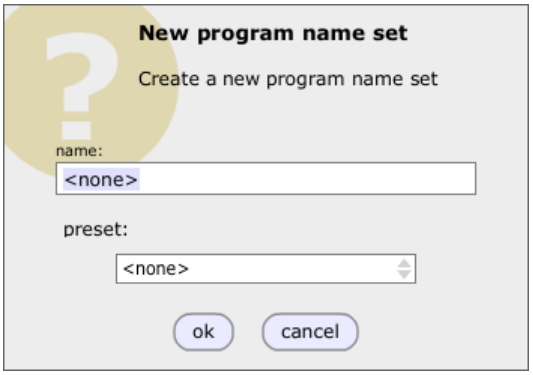


Figure 4.3.4

To edit the preset names in bank:

- Find, and click on the MIDI output your hardware is connected to in the list of MIDI devices on the MIDI group page.
- Click the **edit** button.
- A dialogue window will be appear (Fig. 4.3.5).
- Set the **bank name** parameter to the bank that you wish to edit (you can also rename the bank if you want).
- Select the patch that you wish to rename, and enter a new name for it.
- If your MIDI device counts presets from zero, rather than one, you may wish to click on the **options** button and select the **use zero based numbering** option.

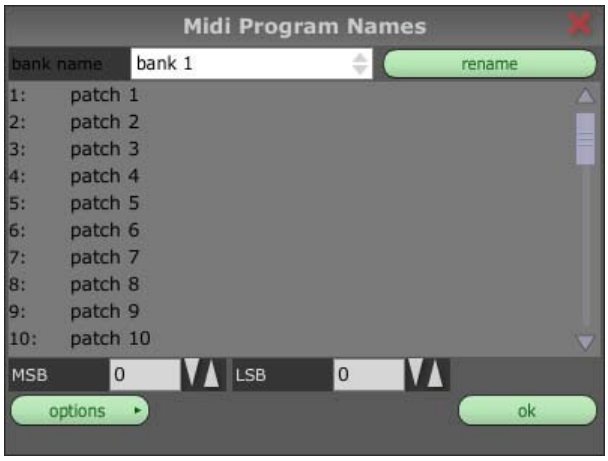


Figure 4.3.5

Once you have configured the patch names for your hardware device, you can enter MIDI program changes into your edit by name. Simply select the clip where the program change should occur, click the **insert program change** option, and select your program from the list.

Working With Software Instruments

So now we've looked at using external MIDI instruments with Tracktion, but there is another type of MIDI instrument available to you: software instruments, or as they are commonly known, VSTis.

In Chapter Three we discussed the filter section, and how to add new filters to a track. If you haven't read that chapter yet, or you think you may need a quick refresher, you may want to review Chapter 3.4 in particular, as software instruments are just another kind of filter. Because signals flow from left to right, you should place your software synthesiser before any effect filters on the track. In general, the only time you would have a filter in front of the synthesiser filter is if you are using a MIDI filter to process MIDI notes before they reach the instrument. Such MIDI filters may take the form of arpeggiators, or transposition filters. For example, Tracktion's pitch shifter filter can be used to transpose MIDI notes as well as process audio. As a rule of thumb though, a software instrument should be the very first filter in the sequence.

Unlike for external MIDI equipment, there is no need to change the track destination from "default audio" when working with software synthesisers. In addition, only a few software synthesisers take any notice of the MIDI channel, so unless you are working with a multi-timbral VSTi, you can usually ignore that setting also.

Another big difference between software and hardware instruments is that all kinds of controls on virtual instruments can be automated using Tracktion's powerful automation system. We will come to look at automation in Chapter Seven.

If you want to experiment with virtual instruments, Tracktion ships with a built in sampler. Chapter 3.4 explains how to use this sampler filter.

In summary, to use a virtual instrument, just add it to a track in the same way that you would an effect filter. That's really all there is to it!

Software Instruments With Multiple Outputs

While most virtual instruments offer only a standard stereo output, there are some, typically drum machines and samplers, that have multiple outputs. If you wish to use these instruments to their full potential, rather than only using the main stereo output channels of the instrument, you will need to wrap them in a rack filter. Rack Filters are extraordinarily powerful, but also a little complex. As such they have a whole chapter (Chapter Nine) of this manual to themselves. Here we will just look at using them for this one specific task.

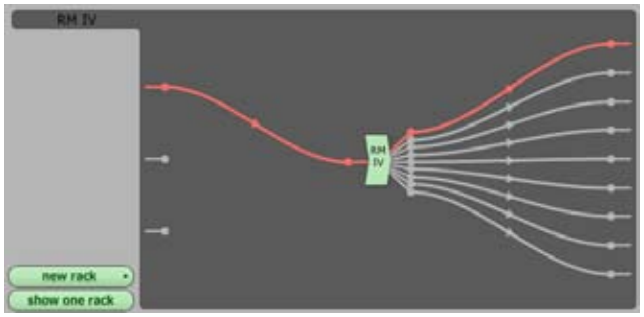


Figure 4.3.6

- Place the multiple-output VSTi on a track as normal.
- Right-click on the VSTi filter, and select the **wrap this filter in a rack** option.
- The VSTi will be replaced by a rack filter, and the rack editor should be visible. (You should see something like Figure 4.3.6).

With your rack ready, you simply need to place copies of it on as many tracks as you have outputs (Fig. 4.3.7). Keep in mind that mono outputs will need a track to themselves.

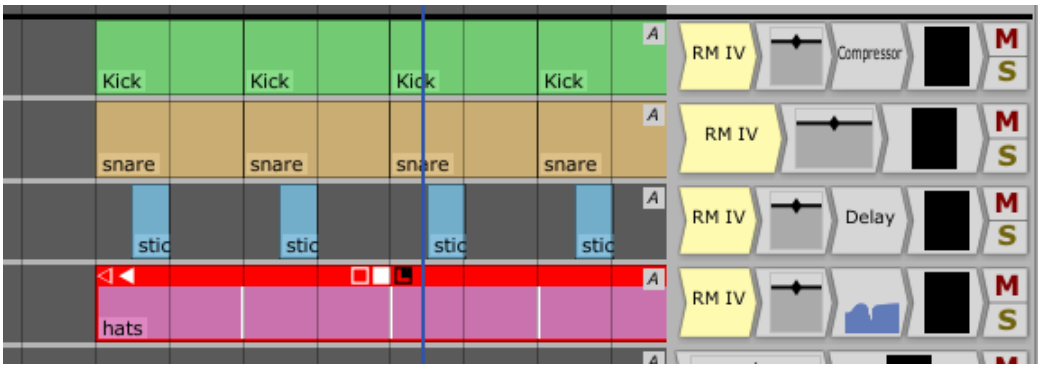


Figure 4.3.7

- Click on each rack filter icon in turn. This will show the rack properties in the properties panel.
- Choose from the **left/right output comes from** boxes, the VSTi output(s) you wish to connect to the current track (Fig. 4.3.8).
- Click the **racks** button, or press **CTRL** + **G** (**CMD** + **G** for Mac users) to hide the rack editor.

Figure 4.3.8

The MIDI Clip Properties

Select a MIDI clip by clicking on it, to access its properties (Fig. 4.3.9).

Figure 4.3.9

Name: The name is shown at the bottom of the clip in the arrange area.

Start/end: These are the points on the time-line at which this clip begins and ends. You can adjust these fields manually for precise positioning if you desire.

Length: This field shows the length of the clip. You can edit it manually if desired. Changing the length will change the clip's end point accordingly.

Offset: View/edit the relationship between the start of the MIDI data and the start of the clip. Recall from the clip tools description that the contents of the clip can be moved along the time-line while the clip itself remains fixed in position; this field shows that displacement.

Colour: You can assign a colour to the clip. Colours can be useful for helping to identify clips, or grouping certain types of instrument, or musical event, together.

Show/hide midi editor: Click this button to show or hide the MIDI editor for the selected clip. **Keyboard shortcut: Z**.

Channel: This field specifies which MIDI channel this clip will transmit on.

Velocity: This setting allows you to scale note velocities. A value of 100% leaves the velocities untouched, lower values reduce them. This control is non-destructive.

The Mute Button: To the right of the velocity slider there is a button represented by a speaker icon. This button can be used to mute a clip. Muting a clip allows you to play the edit with that clip silenced. Clicking the button again will un-mute the clip. A clip that has been muted, will have a somewhat different appearance to non-muted clips. This makes it easy to see at a glance whether a clip is currently muted.

Insert program change: This button displays a menu (Fig. 4.3.10), from which you can access options to edit any program change messages associated with the clip. Note that you can also add or edit program changes manually in the MIDI editor. The MIDI editor is described in Chapter 4.4.

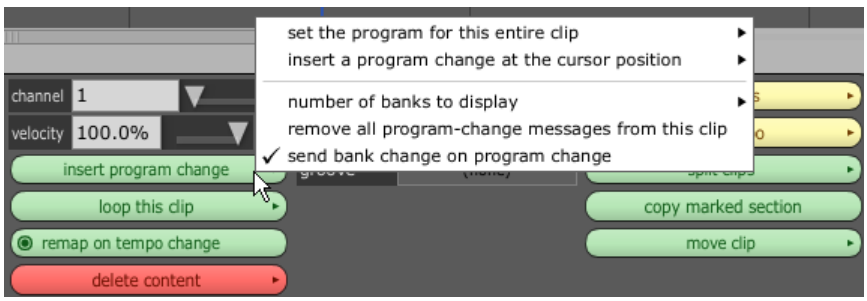


Figure 4.3.10

- **Set the program for this entire clip:** This option sets a program for the clip. The program change will be transmitted at the start of the clip each time the clip is played. Use this option carefully as many MIDI devices require a few seconds for program changes to process, and MIDI notes sent during this transition period may be ignored. MIDI clips used with VST instruments will see the current preset list for the VST instrument. MIDI clips on tracks that route to a MIDI out device will see the program names set up for that output device.
- **Insert a program-change at the cursor position:** This option inserts a program change event into the clip at the position of the play-head cursor.
- **Number of banks to show:** You can select how many banks will be available to the program name sub-menus. Ideally this value should be set to however many banks your MIDI instrument supports.
- **Remove all program-change messages from this clip:** This option removes all program change messages from the clip. If the clip seems to be behaving strangely during play-back, it is always worth using this option to ensure no rogue program changes have crept in.
- **Send bank change on program change:** If this option is ticked, program change messages will be accompanied by bank change messages. Typically you will always want this enabled otherwise only programs for the current bank will be accessible. If program change messages are causing your MIDI instrument to be have strangely, you could always try disabling this option.

Loop This Clip: This button displays a pop-up menu from which you choose how many times the clip should be looped. Looping is explained in Section Seven of this chapter.

Remap On Tempo Change: When this option is enabled, the clip, and its contents, will adjust to match tempo changes. What this means is that the clip will be stretched / shrunk, and repositioned, such that it continues to be correctly synchronised with the tempo and time-line.

Delete content: This button displays a pop-up menu (Fig. 4.3.11) that provides options for removing content from MIDI clips. **Note:** these options all operate destructively on the selected clip(s). Other clips that are copies of this clip will not be affected however.

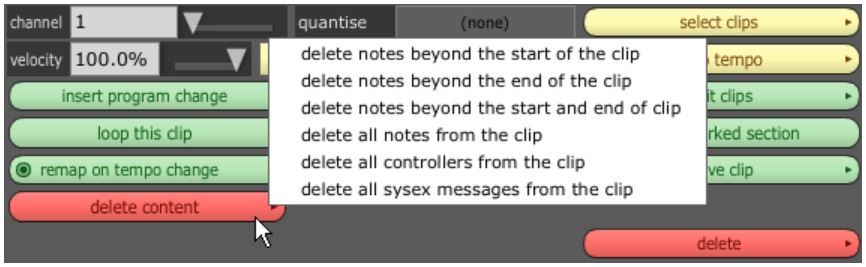


Figure 4.3.11

- **Delete notes beyond the start / end of the clip:** Use these options to remove any MIDI events that exist beyond the boundaries of the current clip.
- **Delete all notes from clip:** Use this option to remove all notes from the selected clip.
- **Delete all controllers from the clip:** Use this option to remove all control change messages and program changes from the clip.
- **Delete all sysex messages from the clip:** Use this option to remove any sysex data contained in the clip. Some MIDI keyboards can generate large amounts of generally useless sysex data, which takes up unnecessary memory and may even cause problems for other devices. This option can be used to remove such unwanted sysex data.

Quantise: Use this option to select the quantising grid. Quantising is discussed in Section Five of the chapter.

Amount: Select how much the notes in this clip should be pulled towards the quantise grid. 100% gives rigid quantising, whereas 0% would have no effect. Quantising is discussed in Section Five of the chapter.

Groove: Select or edit groove templates. Groove templates are discussed in Section Five of the chapter.

Select clips: This button displays a pop-up menu that provides handy shortcuts for selecting groups of clips.

Auto tempo: Use this to set the tempo of the edit to match the clip. Clicking this button will display a pop-up menu (Fig. 4.3.12) with two options:

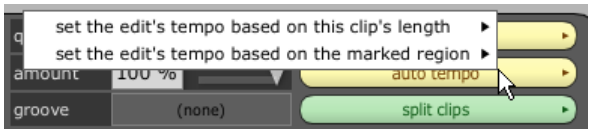


Figure 4.3.12

- **Set the edit tempo based on this clip's length:** Select this option to calculate the tempo from the length of the clip. When this option is chosen, a further menu is shown from which you can select how many beats this clip contains.
- **Set the edit tempo based on the marked region:** Select this option to calculate the tempo from the distance between the loop-markers. When this option is chosen, a further menu is show from which you can select how many beats the loop region contains.

Split clips: This option splits the selected clip(s) into two parts. Clicking this button will display a pop-up menu (Fig. 4.3.13) with three options:

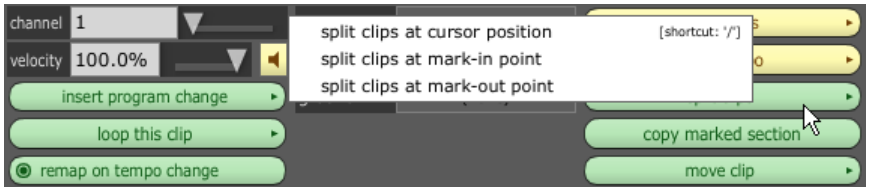


Figure 4.3.13

- **Split clips at cursor position:** Any selected clip(s) that straddle the current play-head cursor position will be split into two parts.
  Keyboard shortcut: /.
- **Split clips at mark-in point:** Any selected clip(s) that straddle the **in marker** will be split into two parts.
- **Split clips at mark-out point:** Any selected clip(s) that straddle the **out marker** will be split into two parts.

Copy marked section: This option takes the section of the clip between the in and out markers, and copies it to the clipboard.

Move clip: This option provides tools for moving the clip(s). Clicking this button will display a pop-up menu (Fig. 4.3.14) with four options:

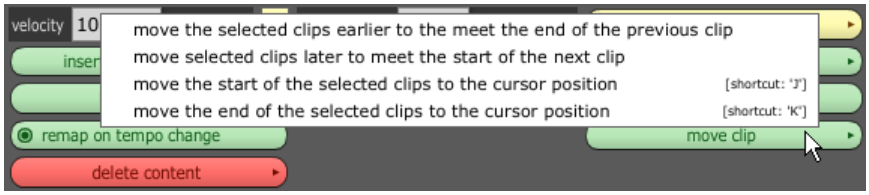

velocity
10
move the selected clips earlier to the meet the end of the previous clip
move selected clips later to meet the start of the next clip
move the start of the selected clips to the cursor position
[shortcut: 'J']
move the end of the selected clips to the cursor position
[shortcut: 'K']
remap on tempo change
move clip
delete content

Figure 4.3.14

- **Move the selected clips earlier to meet the end of the previous clip:** The selected clip is pushed up against the end of the preceding clip in its track.
- **Move the selected clips later to meet the start of the next clip:** The selected clip is pushed up against the start of the next clip in its track.

- **Move the start of the selected clips to the cursor position:** The selected clip will be moved to the current play-head cursor position. Keyboard shortcut: J.
- **Move the end of the selected clips to the cursor position:** The clip to be located before the current play-head cursor position, with its end located at the cursor position.
  Keyboard shortcut: K.

Delete region: Clicking this button displays a pop-up menu (Fig. 4.3.15) with five options for deleting regions from clips.

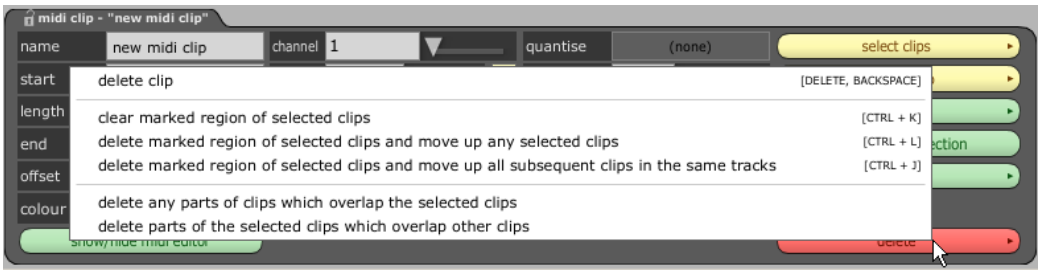


Figure 4.3.15

Note: these options all operate destructively on the selected clip(s). Other clips that are copies of this clip will not be affected however.

- **Delete:** This option removes the clip.
  Keyboard shortcut: DELETE or **BACKSPACE**.
- **Clear marked region of selected clips:** This option replaces the marked region on selected clips with silence.
  Keyboard shortcut: CTRL + **K**.
- **Delete marked region of selected clips and move up any selected clips:** This option removes the marked region on selected clips and moves any selected clips back to close the gap.
  Keyboard shortcut: CTRL + **L**.
- **Delete marked region of selected clips and move up all subsequent clips in the same tracks:** When this option is selected, the marked region on all selected clips is removed, and the gap closed.
  Keyboard shortcut: CTRL + **J**.
- **Delete any parts of clips which overlap the selected clips:** This option causes any clips overlapping the current clip to be trimmed accordingly.
- **Delete parts of selected clips which overlap other clips:** This option causes any parts of this clip that overlaps any others, to be trimmed accordingly.

The MIDI Clip Right-Click Menu

When you right-click on a MIDI clip, you will be presented with a pop-up menu (Fig. 4.3.16) displaying the following options:

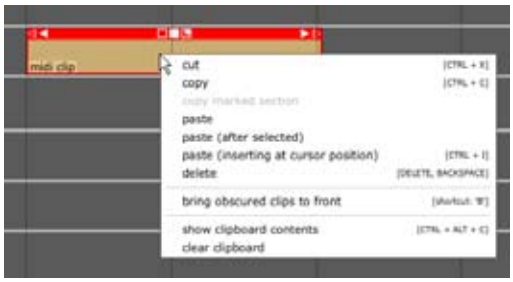


Figure 4.3.16

Cut: Select this to perform a standard “cut” operation. The selected clip(s) will be removed and added to the clipboard.
Keyboard shortcut: CTRL + **X** (**CMD** + **X** for Mac users).

Copy: Select this to perform a standard “copy” operation. The selected clip(s) will be added to the clipboard.
Keyboard shortcut: CTRL + **C** (**CMD** + **C** for Mac users).

Copy marked section: Select this to copy any part(s) of the selected clip(s) that is located between the in and out markers.

Paste: Select this to perform a standard “paste” operation. The contents of the clipboard will be pasted after the current clip. If this option is performed a number of times, each new paste will be placed after the one preceding it. In this way you can quickly lay down a sequence of copied clips.

The keyboard shortcut: **CTRL** + **V** (**CMD** + **V** for Mac users) performs in the same way, unless you click somewhere else in the arrangement area before pasting. In this case, the new clip will be pasted at the position where you clicked, rather than after the source clip. From that point, repeated pastes will land sequentially after the initial paste, in the manner described above.

Paste after selected: Select this option to paste the contents of the clipboard at the end of the selected clip. Unlike with the paste operation, repeated pastes will simply create a pile of stacked clips.

Paste (inserting at cursor position): Select this option to paste the contents of the clipboard at the playhead cursor position. If the cursor is located over this, or another clip on this track, the clip will be split to make room for the pasted material.
Keyboard shortcut: CTRL + **I** (**CMD** + **I** for Mac users).

Delete: Select this to remove the clip from the edit.
Keyboard shortcut: DELETE or **BACKSPACE**.

Bring obscured clips to front: If this clip is placed over another clip, you can use this option to bring the hidden clip forward.
Keyboard shortcut: B.

Show clipboard contents: This option displays the contents of the clipboard in the quick find panel.
Keyboard shortcut: CTRL + **ALT** + **C** (**CMD** + **CTRL** + **C** for Mac users).

Clear clipboard: This option removes all items from the clipboard.

In addition, if the MIDI editor is visible, the pencil, select, eraser, and line tools are also available from the right-click menu. The MIDI editor is described in detail in the next section.

4.4 : The MIDI Editor

The MIDI Editor

When MIDI clips are of sufficient vertical size, they display a MIDI editor, or “piano roll.” You can switch to the MIDI editor very quickly by either double-clicking on the clip to be edited, or pressing the **Z** key when a MIDI clip is selected. Figure 4.4.1 shows the MIDI editor, and associated tools.

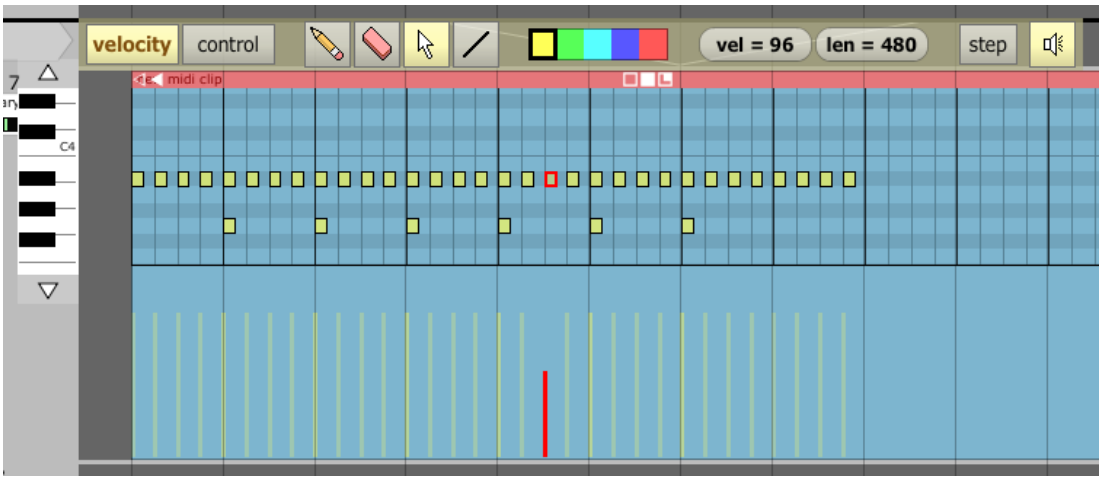


Figure 4.4.1

To create a new MIDI clip from scratch:

- Select the track on which you wish to place the clip.
- Click the **insert new clip** button, and choose **insert new MIDI clip**. Alternatively, you can use the keyboard shortcut **G**.

The location and size of the new clip will be dependent on a few factors. If the option **make new clips the size of the marked region** is enabled in the **options** menu (see Chapter 3.5), and the in/out markers are currently set around a region of the edit, the new clip will be positioned such that it fits between the markers. If, on the other hand, no region is marked (the markers are both located at the same time point), or the **make new clips the size of the marked region** option is disabled, the new clip will be positioned at the play-head cursor, and will be sized such that it fills approximately two thirds of the horizontal display.

The MIDI editor is made up of a number of lanes that run horizontally along the clip. Each of these lanes represents a note on the musical scale. A piano keyboard to the left of the clip shows the relationship between a given lane and the note it represents. As you can see, this arrangement is similar to a staff in standard musical notation.

The amount of notes currently visible can be changed by dragging the piano keyboard with the right mouse button. A default range can be set by clicking the **options** button in the control section, and choosing one of the options under the **default midi editor vertical scale** sub-menu.

To change the octave shown in the editor, drag the piano keyboard vertically with the left mouse button. When the **ALT** key (**CTRL** for Mac users) is held down, you can drag anywhere in the MIDI editor to adjust the currently visible octave.

The length of the note in the editor controls how long the note will be held for. Effectively this is equivalent to the length of time that a key would held down for on a piano. Be aware though that it is up to the MIDI instrument to decide how to represent sustain, so you may find that for some instruments, increasing the length of a note beyond a certain point has no effect.

The vertical divisions are the current time-line ticks. As such, by zooming into and out of the edit, you can change the snap resolution in the MIDI editor.

Adding, Editing, And Deleting Notes

When the pencil tool is selected, clicking on the editor will insert new MIDI notes. The note inserted will start at the location where you clicked, and it will have a length and velocity determined by the **len** and **vel** parameters. (If SNAP is enabled, the note will be placed at the closest snap position relative to the insert point).
Keyboard shortcut: D

The line tool allows you to draw a line of MIDI notes, all with their length and velocity determined by the **len** and **vel** parameters. Use the line tool to repeat a series of notes. This is useful for things like high hats. Simply choose the length, draw a line from start to finish (Fig. 4.4.2) and the notes will be placed (Fig. 4.4.3).
Keyboard shortcut: ALT + **L**.

Figure 4.4.2

Figure 4.4.3

Use the **length** drop-down to choose the length of the inserted notes. Choose between a long 12-beat note or a short 1-tick (< 1/96 beat). Remember, these lengths are measured in beats, not notes or measures. Therefore, 1 beat = a quarter note in 4/4 time, but an eighth note in 6/8 time.

Use the **velocity** drop-down to choose the velocity of the inserted notes. High velocities usually sound louder, but this depends on the instrument.

Tip: Vary your velocity from note to note to make it sound natural.

If you wish to transpose a note, or adjust the timing of an incorrectly played note, you can do so by using the select tool.
Keyboard shortcut: S.

Clicking on an existing MIDI note when the select tool is active allows you to either move or resize MIDI notes. If the mouse pointer is near the right-hand edge of the note, the cursor will switch to a left/right arrow to indicate you are in resize mode. If the pointer is anywhere else over the note you will be in move mode, and you can simply drag the note to a new location. It is also possible to lasso a group of notes by simply dragging a box around them.

The select mode also displays information about currently selected notes in the properties panel, where a number of useful tools can be found.

Changing the values of the **vel** and **len** parameters will apply the new value to any selected note(s). Conversely, editing the length or velocity of a note by hand will in turn update the **vel** and **len** values.

You can transpose notes without losing their start position by holding down the **SHIFT** key as you move them up or down.

Tip: Some of the features of the select mode are also available when in pencil mode, including the ability to select, resize, and move existing notes.

When the eraser tool is selected, notes can be removed by simply clicking on them.
K**eyboard shortcut: E**

You can also delete selected notes by selecting a group of them with the select tool, and clicking the delete midi notes button in the properties panel.
Keyboard shortcut: DELETE or **BACKSPACE**.

The Velocity Editor

In addition to the velocity editing functions provided by the vel control, and through the note properties, you can also use the velocity editor, which is available by selecting the velocity option from the MIDI editor tool-bar, or pressing the **V** key. Figure 4.4.2 shows the velocity editor.

Each note has a vertical velocity line. The taller the line is, the higher the velocity. Editing velocities is as simple as clicking on them with either the pencil or selection tool, at the level you wish them to be.

The line tool can also be used to draw velocity ramps (Figs. 4.4.4 and 4.4.5). Note that the eraser tool has no effect when applied to velocities.

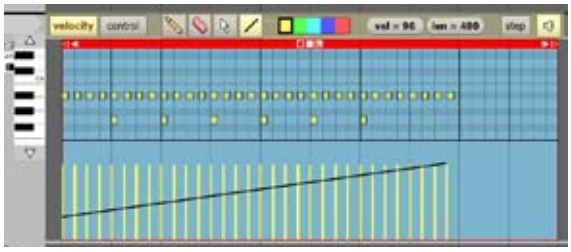


Figure 4.4.4

Figure 4.4.5

If you wish to edit only the velocities of certain notes, just select those notes with the selector tool (Fig. 4.4.6). The velocities of any notes not selected will now be fixed.

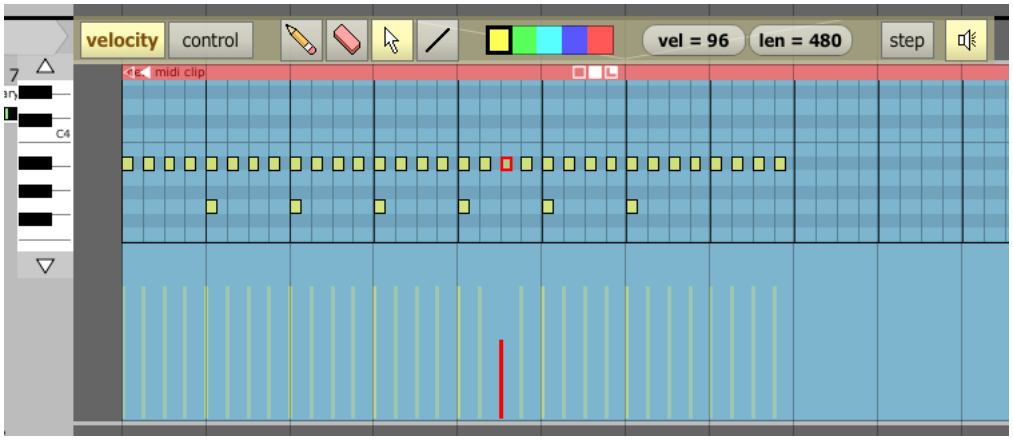


Figure 4.4.6

Editing Controller Events

To edit controller events, click the control button. A view similar to the velocity editor will be displayed (Fig. 4.4.7).

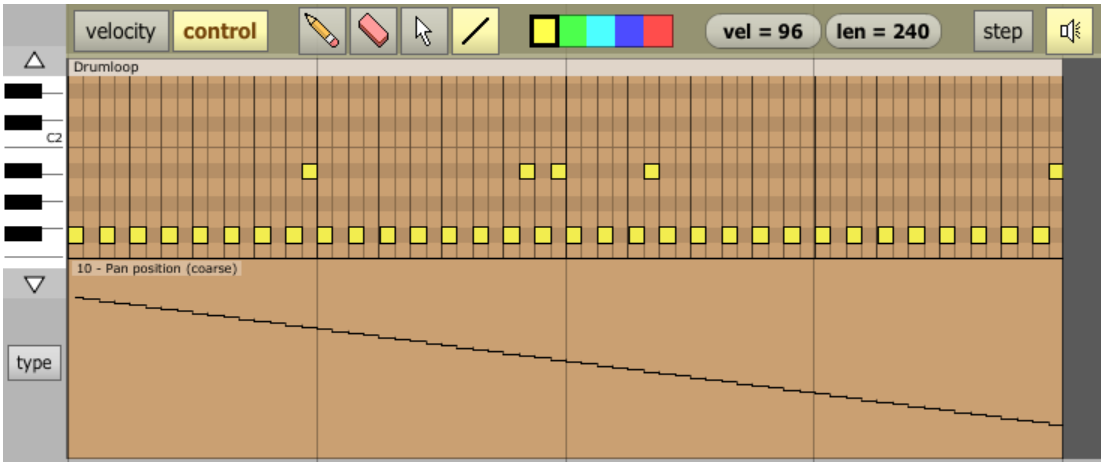


Figure 4.4.7

To the left of the controller event editor is a button labelled **type**, which when clicked displays a list of available controllers (Fig. 4.4.8). If the current clip contains events for a controller, its entry in the list will be shown in a different colour to the other controllers (Pan position and Hold Pedal in Fig. 4.4.8). If you are unsure which control events are contained in a clip, you can use this feature to see at a glance. Selecting a control from this list will cause the editor to show the events, if any, for the chosen controller. In addition, a label at the top-left corner of the editor will show the current controller name and number.

Figure 4.4.8

Once you have selected a controller to edit, you can use the pencil, eraser, select, and line tools to edit the events.

Pencil tool: Use this to insert a control change at the cursor location.

Eraser tool: Use this to remove a control change at the cursor location.

Select tool: Use this to modify an existing control change at the cursor location.

Line tool: Use this to draw a line of control changes between the specified start and end points.

If snapping is enabled, control events will be inserted at the current snapping resolution. The **CTRL** key (**CMD** for Mac users) can be used as usual to override the snapping mode, thus allowing the tools to create smoother control change curves.

Step Entry

When the step entry mode is activated, any MIDI note received from a MIDI input attached to the track will be inserted into the clip at the current play-head cursor position. After the note has been added, the play-head cursor will jump forward to the next snap position, ready for a new note to be input. In this way, you can play a part without needing to worry about being able to play the section live. Step entry can also be handy for entering drum patterns.

If you play a chord, the step editor will treat it as a chord and enter it appropriately.

The **options** button located in the control panel has a menu option labelled **use incoming velocities for MIDI step entry**, and when this option is selected, the velocity at which you play each note on your controller keyboard is applied to the step entered note. If this option is disabled, however, the velocity defined by the vel setting is used instead.

The length of the notes and thus the step is defined by the **len** value.

To insert a rest, or space, in the clip press the ` key. This will cause the play-head to jump to the next snap position without any note being entered.

To work in step entry mode, first ready the track for MIDI recording as if you were about to record live. Next, set the play-head to the point where you want step editing to begin in the clip, activate the step button, and begin playing your sequence.

4.5 : Quantising And Groove Templates

If you have a recorded MIDI part that is a little looser in feel than you would like, you can have Tracktion tighten it up by using one of the quantise tools. If, on the other hand, your timing is just a little too tight, or your MIDI clip was recorded using the step entry mode, you can have Tracktion apply a groove template to it.

Both quantise and groove templates work by shifting the timing of individual notes to match an internal template. In the case of quantise, this template is a fixed grid with a size determined by the quantise resolution. The amount by which notes are shifted towards the quantise grid can be controlled by the “amount” value. Groove templates, on the other hand, deliberately pull notes out of the quantised grid, which can give a more natural, or human, feel. The templates used by the groove templates tool are user editable, so you can create your own grooves for use in your songs.

The quantise and groove template tools can both be used completely non-destructively, so you can make changes and experiment without fear of losing your original work.

To use the quantise or groove tools, simply select the clip(s) you wish to apply the process to. Be careful that you have the clip, and not any individual notes selected, as the groove and quantise tools are non-destructive at the clip level, but make permanent changes when applied to individual notes. Similarly, the quantise tool available for MIDI input devices is permanent in nature, and therefore should be used with care.

Figure 4.5.1 shows the MIDI clip properties, where the quantise and groove template tools are located.

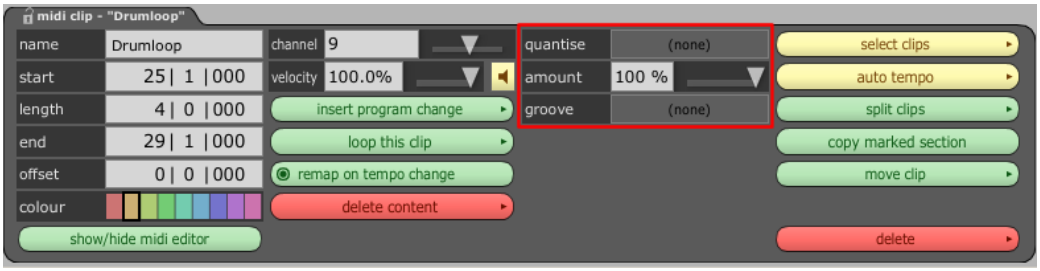


Figure 4.5.1

The quantise setting is used to select the quantise grid. The grid is defined in terms of fractions of a beat, so 1/4 of a beat, given a standard 4/4 bar, would be equal to 1/16th in musical notation. Once this value is set, adjusting the amount control defines how tightly notes are pulled to the quantise grid. A value of zero percent would have no effect on the note events, whereas a value of 100% would be a rigid quantise.

It is important to understand that by pulling notes to a rigid grid, quantise will, at high settings, remove all sense of live feeling from a MIDI part. Furthermore, if a clip mixes 16th notes, with 1/8th notes, or normal notes with triplets, for example, the quantise will likely be as detrimental to one aspect of the clip as it is beneficial to another.

Even though clip quantise in non-destructive in nature, you will see the notes in the clip move around as you adjust the quantise grid, and the quantise amount.

The groove option displays a menu from which you can select an existing groove template to be applied to the clip. Unlike with the quantise control, you will not see the groove template changes in the clip, but when you play back the edit you should hear the effect.

The quantise control does not affect the amount of groove applied by a groove template if one is selected, it only controls how heavily the clip is quantised towards the quantise grid. What this means in practise is that you can use both quantise and groove templates together to provide a groove to a part that is either tightly or loosely quantised.

In addition to selecting existing templates to apply to the current clip, you can also edit or create new templates. Select the edit groove templates option, and the groove editor will be displayed (Fig. 4.5.2).

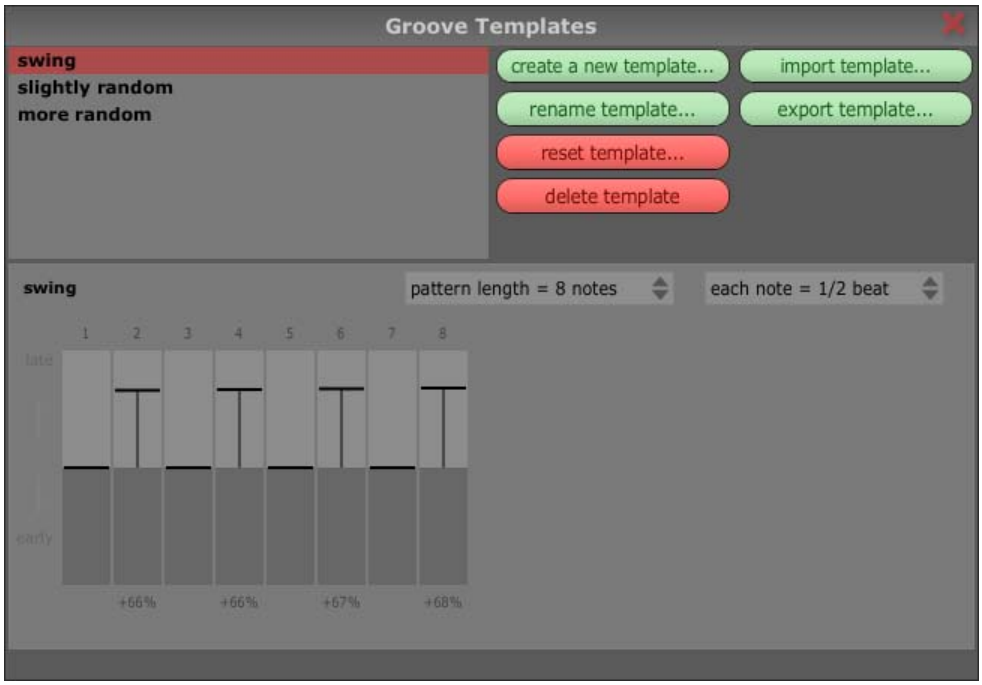


Figure 4.5.2

The groove is created by adjusting the vertical bars. Each bar represents a beat division defined by the **each note =** drop-down list to the right of the editor window. Raising the level above the mid-point will cause notes at this beat division to play late, whereas lowering them below the mid-point will cause the notes to play early.

The length of the pattern is set through the other drop-down list. In the image above the length is set to eight notes, and correspondingly there are eight vertical bars.

In addition to the groove editing tools, the groove editor window has the following options:

Create new template: Click this button to add a new template the list.

Rename template: Click this button to rename the selected template.

Reset template: Clicking this button will return the template to the default form.

Delete template: Use this option to remove the selected template from the list.

Import template: Use this option to load a previously exported template file.

Export template: This option allows you to save a template as a file. You can use this to back-up templates, or to share them amongst your collaborators.

4.6 : Audio Clips

The Audio Clip Properties

In Section One of the this chapter, you saw how to use the clip tools located in title-bar of an audio clip. In addition to these controls, selected clips have a range of options and properties (Fig. 4.6.1).

Note that the properties panel has two tabs when an audio clip is selected. The first tab is the standard properties tab, and it is this tab that we will look at in this section. The second tab, called the **loop properties** tab is used when looping audio clips, and is detailed in Section Seven of this chapter.

Figure 4.6.1

Name: The name is shown at the bottom of the clip in the arrange area.

Start / end: These are the points on the time-line at which this clip begins and ends. You can adjust these fields manually for precise positioning if you so desire.

Length: This field shows the length of the clip. You can manually edit this field if needed.

Offset: View / edit the relationship between the start of the audio data and the start of the clip. Recall from the clip tools description that the contents of the clip can be moved along the time-line, while the clip itself remains fixed in position. This field shows that displacement.

Remap on tempo change: When this option is enabled, the clip will be resized and time-stretched such that it is still in key and in time with the rest of the edit.

Loop This Clip: This button displays a pop-up menu from which you choose how many times the clip should be looped. Looping is explained in Section Seven of this chapter.

Gain: Use this control to boost or cut the level of this clip. This allows you to easily make per-clip adjustments to level, and is complementary to main volume / pan filter control for the track.

Pan: Use this control to adjust the stereo panning of this clip. This allows you to easily make per-clip adjustments to pan position, and is complementary to main volume / pan filter control for the track.

Active channels: You can use these two toggle buttons to disable the left or right channels. This allows you to quickly treat a stereo audio file as mono.

Fade in/out: View or edit the fade envelope lengths (tool “F” in Fig. 4.1.2) for this clip. These time values are measured from the end of the clip in towards the middle.

Fade slope: Choose the slope type for the fade in/out envelopes from these icons.

Auto crossfade: If this clip overlaps another audio clip, this button automatically adjusts the fade in and out envelopes for both clips, to create a cross-fade across the overlapping region. Figure 4.6.2 shows an example of an auto-crossfade.

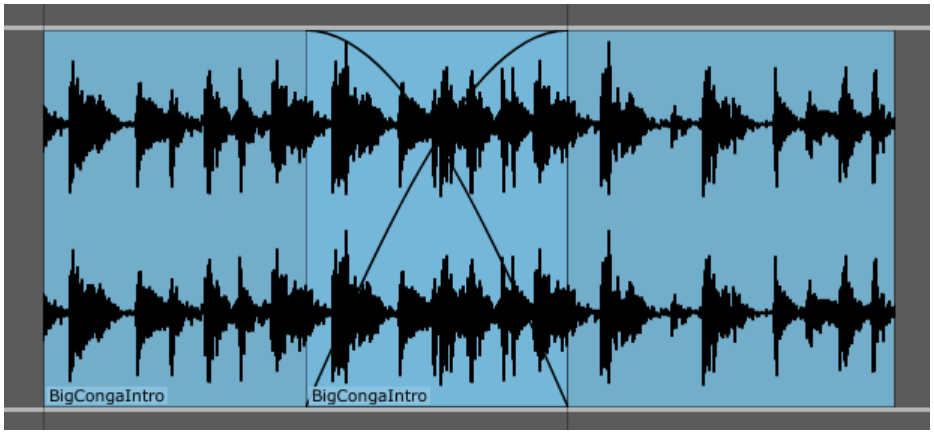


Figure 4.6.2

Stretch: Select the time-stretching mode to use. Normally when changing the speed of an audio clip, both the length and pitch of the clip will change together. Time-stretching allows an adjustment of length without affecting pitch, or vice-versa. The options available are **no time-stretching**, **transient** and **tonal**. The **no time-stretching** mode will simply change the playback rate of the clip, which will alter both length and pitch. The other two options will 'stretch' the audio to allow for natural sounding pitch/tempo changes. Typically you will use transient when working with percussive audio, and tonal when working with other kinds of audio, but you should always experiment to find which mode works best for the each specific task.

Speed: This controls the rate at which the audio is played back. A value of one is the normal speed. Higher values result in the audio clip playing faster, and lower values correspondingly result in the clip playing more slowly. In practical terms what this will mean is that the time taken for the entire content of the clip to play will vary with this setting. If no stretch mode has been selected, the pitch will also vary as the speed is adjusted, otherwise the pitch of the clip will remain constant.

Holding down the **ALT** key (**CTRL** for Mac users) while resizing an audio clip using one of the triangle resize tools in the clip's title bar, will automatically change the length of the clip by varying the speed. For example, by using this feature a drum loop can be easily stretched to a suitable bar length, thus matching it to the current tempo.

Change speed: This option displays a menu with some pre-set change factors for the **speed** setting.

Pitch: This control allows you to alter the pitch of the clip. When a new pitch is chosen for a clip, a time-stretching mode other than **no time-stretching** will automatically be selected. If the mode is already set to something other than **no time-stretching**, it will not be changed. You can use this option to bring vocals into tune with an edit, for example.

Change pitch: This option displays a menu with standard semitone/octave pre-set pitch changes.

Colour: You can assign a colour to the clip. Colours can be useful for helping to identify clips, or grouping certain types of instrument, or musical event, together.

View source info: Clicking this button shows information about the source item. Essentially this is the same information that you would see if you clicked on the source item on the projects page.

Select clips: This button displays a pop-up menu that provides handy shortcuts for selecting groups of clips.

Auto tempo: Use this to set the tempo of the edit to match the clip. Clicking this button will display a pop-up menu (Fig. 4.6.3) with two options:

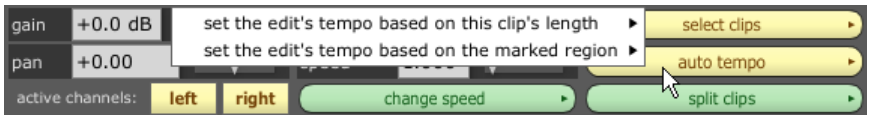


Figure 4.6.3

- **Set the edit tempo based on this clip's length:** Select this option to calculate a tempo for the edit from the length of the clip. When this option is chosen, a further menu is shown from which you can select how many beats this clip contains.
- **Set the edit tempo based on the marked region:** Select this option to calculate the tempo from the distance between the in and out markers. When this option is chosen, a further menu is show from which you can select how many beats the loop region contains.

Split clips: This option splits the selected clip(s) into two parts. Clicking this button will display a pop-up menu (Fig. 4.6.4) with three options:

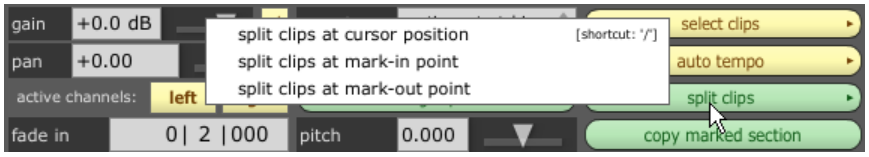


Figure 4.6.4

- **Split clips at cursor position:** Any selected clip(s) that straddle the current play-head cursor position will be split into two parts.
  Keyboard shortcut: /.
- **Split clips at mark-in point:** Any selected clip(s) that straddle the loop-begin marker will be split into two parts.
- **Split clips at mark-out point:** Any selected clip(s) that straddle the loop-end marker will be split into two parts.

Copy marked section: This option takes the section of the clip between the loop markers, and copies it to the clipboard.

Move clip: This option provides tools for moving the clip(s). Clicking this button will display a pop-up menu (Fig. 4.6.5) with four options:

- **Move the selected clips earlier to meet the end of the previous clip:** The selected clip is pushed up against the end of the preceding clip in its track.
- **Move the selected clips later to meet the start of the next clip:** The selected clip is pushed up against the start of the next clip in its track.
- **Move the start of the selected clips to the cursor position:** The selected clip will be moved to the current play-head cursor position.
  Keyboard shortcut: J.
- **Move the end of the selected clips to the cursor position:** The clip to be located before the current play-head cursor position, with its end located at the cursor position.
  Keyboard shortcut: K.

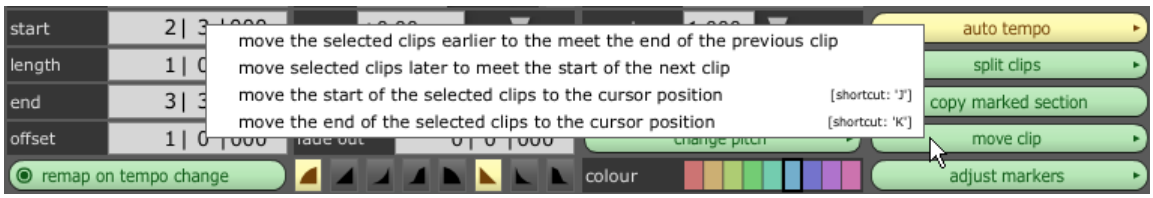

start
length
end
offset
remap on tempo change
move the selected clips earlier to the meet the end of the previous clip
move selected clips later to meet the start of the next clip
move the start of the selected clips to the cursor position
[shortcut: 'J']
move the end of the selected clips to the cursor position
[shortcut: 'K']
auto tempo
split clips
copy marked section
move clip
adjust markers
colour

Figure 4.6.5

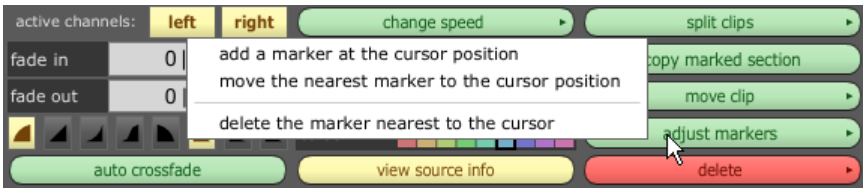


Figure 4.6.6

Adjust markers: Audio clips can have markers associated with them., which can be useful for marking points of interest. Markers are discussed in Chapter 1.9. Note that markers are a property of the underlying audio item, not the clip. As such, editing markers in one clip will impact all clips that share the same source audio file in this project. Clicking this button displays a pop-up menu (Fig. 4.6.6) with three options:

- **Add a marker at the cursor position:** Use this option to add a new marker to the audio file. The position of the marker will be determined by the position of the play-head cursor.
- **Move the nearest marker to the cursor position:** Use this option to adjust the position of a marker. The marker that is nearest the position of the play-head cursor will snap to the current cursor location.
- **Delete the marker nearest to the cursor position:** Use the option to remove a marker. The marker that is located nearest to the play-head cursor will be removed.

Delete region: Clicking this button displays a pop-up menu (Fig. 4.6.7) with five options for deleting regions from clips. All of these options are non-destructive.

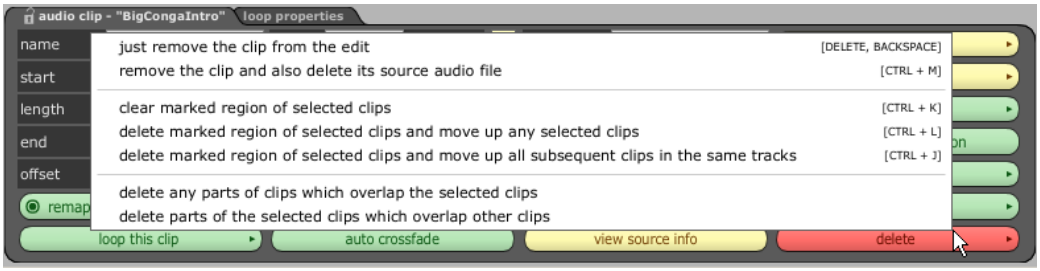

audio clip - "BigCongaIntro"
loop properties
name
start
length
end
offset
remap
just remove the clip from the edit
[DELETE, BACKSPACE]
remove the clip and also delete its source audio file
[CTRL + M]
clear marked region of selected clips
[CTRL + K]
delete marked region of selected clips and move up any selected clips
[CTRL + L]
delete marked region of selected clips and move up all subsequent clips in the same tracks
[CTRL + J]
delete any parts of clips which overlap the selected clips
delete parts of the selected clips which overlap other clips
loop this clip
auto crossfade
view source info
delete

Figure 4.6.7

- **Delete:** This option removes the clip.
  Keyboard shortcut: DELETE or **BACKSPACE**.
- **Clear marked region of selected clips:** This option replaces the marked region on selected clips with silence.
  Keyboard shortcut: CTRL + **K** (**CMD** + **K** for Mac users).
- **Delete marked region of selected clips and move up any selected clips:** This option removes the marked region on selected clips and moves any selected clips back to close the gap.
  Keyboard shortcut: CTRL + **L** (**CMD** + **L** for Mac users).
- **Delete marked region of selected clips and move up all subsequent clips in the same tracks:** When this option is selected, the marked region on all selected clips is removed, and the gap closed.
  Keyboard shortcut: CTRL + **J** (**CMD** + **J** for Mac users).
- **Delete any parts of clips which overlap the selected clips:** This option causes any clips overlapping the current clip to be trimmed accordingly.
- **Delete parts of selected clips which overlap other clips:** This option causes any parts of this clip that overlaps any others, to be trimmed accordingly.

Tip: You can open the source audio for a clip in an external audio editor. Right-click on an audio clip and select the edit using.. option, or the keyboard shortcut **CTRL** + **W** (**CMD** + **W** for Mac users).

The Audio Clip Right-Click Menu

When you right-click on an audio clip, you will be presented with a pop-up menu (Fig. 4.6.8) displaying the following options:

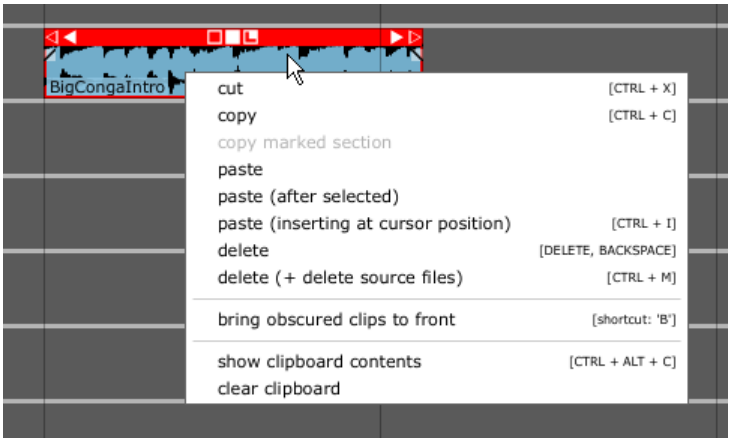

BigCongaIntro
cut [CTRL + X]
copy [CTRL + C]
copy marked section
paste
paste (after selected)
paste (inserting at cursor position) [CTRL + I]
delete [DELETE, BACKSPACE]
delete (+ delete source files) [CTRL + M]
bring obscured clips to front [shortcut: 'B']
show clipboard contents [CTRL + ALT + C]
clear clipboard

Figure 4.6.8

Cut: Select this to perform a standard “cut” operation. The selected clip(s) will be removed and added to the clipboard.
Keyboard shortcut: CTRL + **X** (**CMD** + **X** for Mac users).

Copy: Select this to perform a standard “copy” operation. The selected clip(s) will be added to the clipboard.
Keyboard shortcut: CTRL + **C** (**CMD** + **C** for Mac users).

Copy marked section: Select this to copy any part(s) of the selected clip(s) that is located between the loop-begin and loop-end markers.

Paste: Select this to perform a standard “paste” operation. The contents of the clipboard will be pasted after the current clip. If this option is performed a number of times, each new paste will be placed after the one preceding it. In this way you can quickly lay down a sequence of copied clips.

The keyboard shortcut: **CTRL** + **V** (**CMD** + **V** for Mac users) performs in the same way, unless you click somewhere else in the arrangement area before pasting. In this case, the new clip will be pasted at the position where you clicked, rather than after the source clip. From that point, repeated pastes will land sequentially after the initial paste, in the manner described above.

Paste after selected: Select this option to paste the contents of the clipboard at the end of the selected clip. Unlike with the paste operation, repeated pastes will simply create a pile of stacked clips.

Paste (inserting at cursor position): Select this option to paste the contents of the clipboard at the play-head cursor position. If the cursor is located over this, or another clip on this track, the clip will be split to make room for the pasted material.
Keyboard shortcut: CTRL + **I** (**CMD** + **I** for Mac users).

Delete: Select this to remove the clip from the edit.
Keyboard shortcut: DELETE or **BACKSPACE**.

Delete (+ delete source files): When this option is selected, the clip and its source material are both deleted. You will be prompted for confirmation.
Keyboard shortcut: CTRL + **M** (**CMD** + **M** for Mac users).

Bring obscured clips to front: If this clip is placed over another clip, you can use this option to bring the hidden clip forward.
Keyboard shortcut: B.

Show clipboard contents: This option displays the contents of the clipboard in the quick find panel.
Keyboard shortcut: CTRL + **ALT** + **C** (**CMD** + **CTRL** + **C** for Mac users).

Clear clipboard: This option removes all items from the clipboard.

4.7 : Looping Clips

An Overview Of Looping

Clip looping is a very powerful tool when working with MIDI and audio clips. The principal is the same for both clip types, but the under-the-surface behaviour is significantly different. We will start therefore by looking at looping in its broadest sense, as it applies to both MIDI and audio clips, then we will look at the specifics for both clip types individually.

First, although the name may seem fairly descriptive, lets look at what the term ‘looping’ actually refers to.

Looping, at its most fundamental, is simply the act of taking a single clip and repeating it for some arbitrary number of times. You could achieve this quite easily be simply pasting multiple copies of the clip one after another. What makes a loop clip different from a clip that has simply been duplicated, is that the looped clip continues to act as one single clip.

Stated correctly, when a clip is in loop mode, it is not the clip that is looped, but rather the content inside it. The effect from the clip perspective is that the content extends infinitely beyond the end of the clip. It doesn’t matter how long you make the clip, there will still be content there to see. The fact that it is the content that is looping has major implications for looped MIDI clips, as we shall see later.

In Section One of this chapter you were introduced to the clip title-bar tools. You may recall the “L” button located roughly at the centre of each clip’s title-bar. This is the toggle control that switches a clip between looped and non-looped mode.

Figure 4.7.1 shows a standard MIDI clip, and Figure 4.7.2 shows the same clip after its loop mode has been enabled and the clip has been stretched such that it loops a total of three times.

Figure 4.7.1

Figure 4.7.2

Each loop iteration is shown in the clip by a highlighted vertical line. This line makes it easy to see the length of the original clip, and also how many times the clip is being looped.

When loop mode is activated, the boundaries of the clip define the size of the loop. For example if you had resized a four bar drum part down to two bars, then activated looping, it will be those two bars that are looped. If you wish to change which region of a clip’s contents are included in the loop, you can either disable looping for that clip, edit the clip size according, and then re-enable looping, or you can drag the loop divider line horizontally along the length of the clip.

In most cases, operations that can be performed on regular clips will be available to, and work the same on, looped clips.

For example, if you split a loop clip, you will simply end up with two loop clips that meet at the loop point. Thus splitting a loop clip will have no audible change, just like splitting a regular audio or midi clip. Similarly, if you use the stretch tools to resize both the clip and the content, the whole loop will simply stretch as if it were a regular clip.

In a few cases such as merging MIDI clips, the looped clips will merge as normal, but the resultant clip will not be looped. You can always enable looping once the merge is complete, of course.

Looping MIDI Clips

Looped MIDI clips provide a simple method of quickly repeating a clip over a number of bars. Because it is the content of the MIDI clip, and not the clip itself that is being repeated, a useful side effect is that an edit made to any part of the loop will be reflected along the entire length of the loop.

What this means in practise is that material that is often repeated many times, such as high-hat patterns, can be easily spread across many bars, but still only need one edit to adjust the swing on an individual closed hat.

Looping Audio Clips, And The Loop Properties Tab

You may recall from Section Six that audio clips have a special secondary properties tab, called the loop properties tab (Fig. 4.7.3). This tab is used to adjust the way in which audio files loop, and in particular how to set up the time-stretching behaviour of the loop.

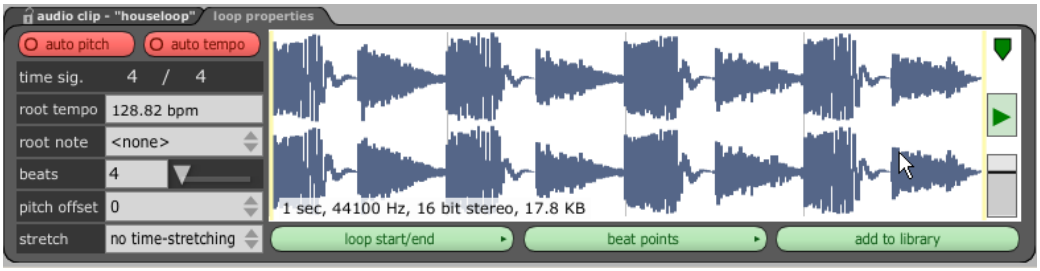


Figure 4.7.3

At this point it is worth examining the slight difference between regular audio files and audio loop files. It is possible for audio files to contain pitch or tempo information. In most cases, audio files you are likely to encounter will not have data such as this embedded in them; indeed, in many cases, such information would even be rather meaningless. A kick drum sample, for example, does not have a tempo; it is a single shot sound. It is debatable whether a kick drum even has a pitch. Typically then, such information is only useful when the audio file contains rhythmic, and / or melodic material. If, instead of a kick drum, the sample was an entire percussive loop, knowing the tempo would provide us with an easy method of determining its suitability for a song, even before we previewed it.

In essence then, the difference between an audio loop file and a regular audio file is simply whether the file contains extra descriptive information. This information will typically take the form of key, tempo, and genre tags, which help with automatically cataloguing the file in a library, and matching it to an edit. If you have read Chapter 3.2 and this all sounds familiar, that's because it is this method that is used by Tracktion's loop librarian to search your loops. Many commercially available sample CDs will provide loops that are pre-tagged ready for use with Tracktion's loop library. Rex files and Acid files both contain tempo information, and Apple Loops, or GarageBand loops, contain all kinds of information from genre to mood alongside the more standard tempo, and key values. At this point you are probably wondering what all of this has to do with loop clips, so let's look at what happens when a new audio file is imported into an edit.

Typically when an audio clip is pasted on a track, the length of the clip, and the rate / pitch of the audio, will simply be a reflection of the underlying audio file. If the imported audio is a semi-tone out of tune with the edit, or a few BPM out of time, that's how it will sound when the edit is played back. If, however, suitable tempo and pitch information is stored in the audio file, Tracktion can automatically adjust the pitch and length of the clip to match the current edit. If you try dragging an audio loop into your edit from the loops quick find panel, you will notice that the clip is always correctly sized for the edit.

So, back to the loop properties panel. The options here primarily allow you to control the time-stretch behaviour of the clip. You can specify whether the clip's pitch or tempo should be affected by changes to the key or tempo of the edit, you can set the baseline values for the clip, and you can choose which time-stretching method, if any, the clip will use when needed.

These settings basically allow you to take an imported audio file that lacks built-in loop information, or one of your recorded clips, and have it gracefully track key changes and tempo changes in your edit. However, this is only half of the story, as you can take the clip and convert it into a loop file that can be added to your loop library for use in your other projects. In this way, you can create your own loop files, and have them be indexed by tempo and genre, etc., in Tracktion's loop library. Before we look at how to do this though, let's look at the loop properties in detail.

Auto pitch: When this option is enabled, the pitch of this clip will automatically follow pitch changes on the global track. For example, imagine you have a 16 bar bass-line that you are looping throughout your edit. If the key changes at any point in the edit, the bass-line loop will stay in key, because it will be automatically pitch-shifted as needed to match the key of the edit at any given point. Tracktion determines what transposing, if any is needed, by looking at the value of the root note field. **Note:** this option cannot be enabled unless a root note has been set.

Auto tempo: When this option is enabled, Tracktion will automatically time-shift the clip to keep time with the edit. If there are tempo changes throughout the edit, the clip will keep in time regardless. Of particular note is the fact that clip will even follow tempo ramps, with the tempo of the audio changing gracefully alongside your edit. Tracktion determines the base tempo of the clip from the value specified in the root tempo field.

Time sig.: You can specify a time signature for the loop. This information will be saved along with the loop, if you choose to add it to your loop library, and will be used by the loop librarian to help locate loops by style.

Root tempo: This field specifies the root tempo of the loop, i.e., the tempo before any speed adjustments are made. This value is used to match the loop to the tempo of an edit. This field is not editable by hand. Instead, when a loop has been correctly trimmed by adjusting the loop start/end points, and the beats field is set appropriately, the tempo will be calculated automatically.

Root note: This field specifies the root note of the loop, i.e., the note before any pitch adjustments are made. This value is used to match the pitch of the loop to the key of an edit. For example, if the loop is played in the key of B, and the edit is currently in the key of A, the pitch of the loop will be transposed downwards by two semi-tones.

Pitch offset: This field allows you to add an offset to the root note. This is useful if, for example, you want the loop to play a harmony a fifth above the root note of the current key.

Stretch: This option allows you to select the time-stretching mode to use. There are three modes available: no time stretching, transient, and tonal. If either pitch or tempo mapping are enabled, you will need to use either transient, or tonal. Transient is best on percussive unpitched material, such as drum loops. Tonal is best used on melodic content.

Loop start and end: You can edit the section of the source audio file that is used in the loop. This allows you to loop files that have not been cleanly trimmed to beat/bar boundaries, or that contain only a few bars of audio that you wish to use. The wave view directly above this button has two adjustable loop markers that can be manually adjusted to define the loop region.

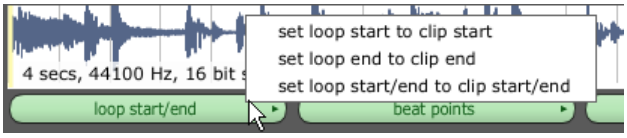

set loop start to clip start
set loop end to clip end
set loop start/end to clip start/end
4 secs, 44100 Hz, 16 bit
loop start/end
beat points

Figure 4.7.4

This button displays a pop-up menu (Fig. 4.7.4) with options to automatically set the markers based on the clip edges. Trimming the clip, and using these menu options to set that loop markers allows you to utilize the full range of clip editing tools at your disposal to accurately set the loop region.

- **Set loop start to clip start:** This option automatically adjusts the loop start marker to match the point on the source audio file where the selected clip starts.
- **Set loop end to clip end:** This option automatically adjusts the loop end marker to match the point the source audio file where the selected clip end.
- **Set loop start/end markers to clip start/end:** This option sets both the start and end positions of the loop markers in one pass, providing a loop region that exactly matches the current contents of the selected clip.

To manually adjust the loop start and end markers, drag the vertical loop marker bars (typically these will be pale yellow lines located at either end of the audio file display) to the desired point in the audio file (Fig. 4.7.5).

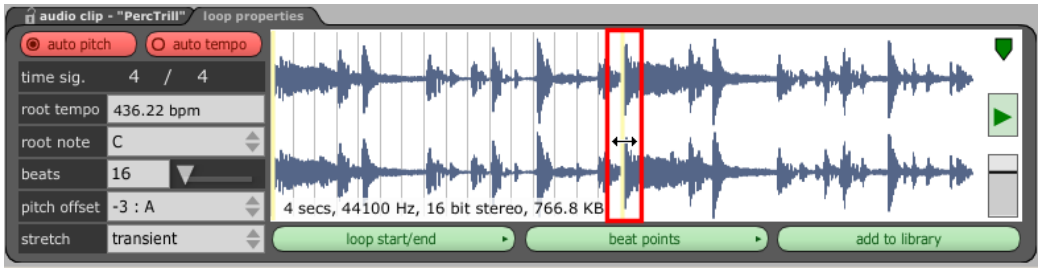


Figure 4.7.5

Beat points: Setting beats points helps the time stretch algorithms accurately maintain the feel of the source material, and produce a natural sounding time/pitch shift. Clicking this button displays a pop-up menu (Fig. 4.7.6) with the following tools for setting and editing beat points. You can also manually edit these points.

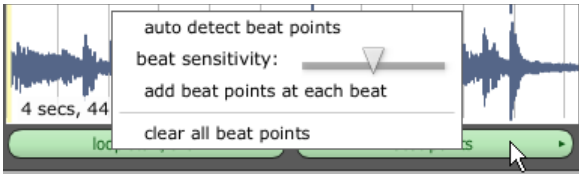


Figure 4.7.6

- **Auto detect beat points:** When this option is selected, Tracktion will attempt to detect transients in the audio file that suggest beat points. For each detected beat, a beat marker will be inserted. These beat markers can be moved and deleted manually, if needed. You can also add custom beat points for finer control over the beat markers. Auto-detected beat points will be shown as orange coloured arrows above the wave file view. Manually moving an auto-detected beat marker will change its color to green.
- **Beat sensitivity:** This control defines how large a transient is needed for Tracktion to detect a beat. By moving the slider to the left, you are instructing Tracktion to ignore small transients. The further you move the slider to the left, typically the fewer beat points will be found. Correspondingly, moving the slider to the right makes Tracktion progressively more sensitive to transients.
- **Add beat points at each beat:** When this option is selected, rather than attempting to find transients, Tracktion will instead create beat markers at each tempo beat position. If the material is not rhythmic in nature, this is generally the best approach to adding beat marks. Beat points created by choosing this option will be shown as green arrows above the wave file view.
- **Clear all beat points:** All currently set beat points will be cleared.

To manually adjust detected beat points, you can drag the green or orange marker arrows (Fig. 4.7.7) left and right to set them to a new position. If you drag one downwards, the marker will be removed. The green arrow icon above the preview level control to the right of the wave view can be dragged over the wave to create a new maker. This allows you to fine tune the auto-detection process if desired.

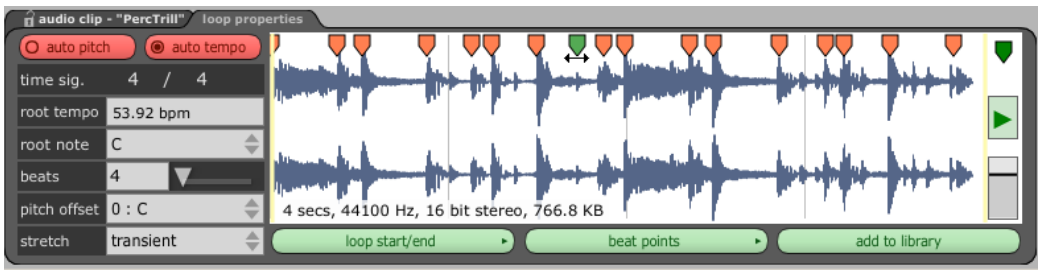


Figure 4.7.7

To create a new loop:

- Adjust the loop start/end markers to enclose just the desired loop.
- Set the beats field to the number of beats in the loop.
- The tempo field will update to show the tempo of the clip.
- Select the root note of the clip, if applicable. For untuned material such as percussive loops, you would typically leave this as <none>.
- Click the **add to library** button. A window (Fig. 4.7.8) will be shown in which you can specify genre and style information about the clip. Select the options that best describe your clip.
- Enter a name for your loop and click the **OK** button to add the clip to your library. The file will be copied into your loops library directory, and will now be available in the loops quick find panel.

Figure 4.7.8

Chapter 5: Recording

Chapter Contents

5.1 : Assigning And Preparing An Audio Input
5.2 : Assigning And Preparing A MIDI Input
5.3 : The Recording Modes Explained
Normal Recording Mode
Punched Recording Mode
Looped Recording Mode
Live Monitoring Without Recording
Step Recording Mode

5.1 : Assigning And Preparing An Audio Input

To select an audio input device, simply click on the shaded input region to next to the name of the track on which you wish to record. A pop-up menu will be shown, and from it you can select the desired input device (Fig. 5.1.1). If the device is already assigned to another track, you can instead simply drag the input icon to this track. The list of input devices will be shown using their alias names, which can be set, or altered, by editing the input device's properties (see Chapter 2.1 for more details).

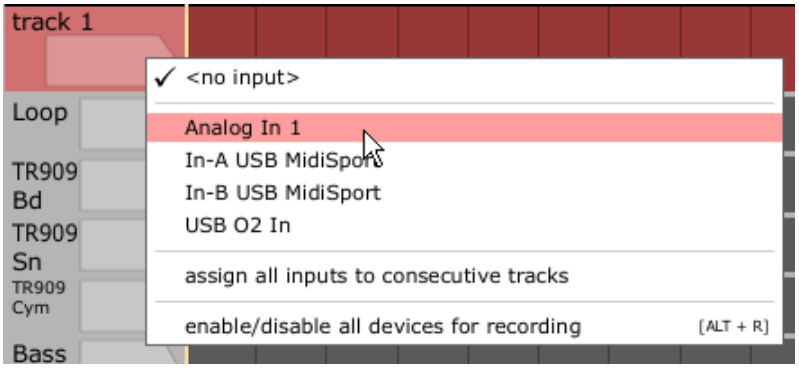


Figure 5.1.1

Note that you can also choose the **assign all inputs to consecutive tracks** option to quickly set Tracktion up as a multi-track recorder. This will assign each of your enabled audio inputs to a track in sequence, starting with the current track. This can often come in handy if you have an input device for each member of your band, and you want to quickly set Tracktion up to record a live jamming session.

Input devices can be enabled or disabled by clicking the large red "R" icon (Fig, 5.1.2). If the icon is solid red, then the input is armed. Otherwise, if the icon is non-solid the input is disabled. Ensure that your input is armed.

Figure 5.1.2

You can use the **enable all devices for recording** option from the input pop-up menu to quickly enable all inputs. The **disable all devices** option correspondingly disables all inputs. The **ALT** + **R** (**CTRL** + **R** for Mac users) keyboard shortcut can also be used to toggle all inputs on and off.

Once the input has been assigned, you are all ready to start recording. Before you do though, you should check your input levels and ready the source material. A few seconds spend here can save you missing a recording of a great performance.

You can see the level of the incoming audio at a glance just by looking at the input icon, as it has a small level meter. Typically this meter is too low resolution to be useful for monitoring though, and it is of most use as a quick verification that signal is reaching the input without problem.

If you click on the input device, the properties will be shown in the properties panel. There you can find a larger meter that is better suited to the task of setting levels. Chapter 2.1 discusses the options you will find in the properties panel when an audio input device is selected.

If you need to monitor levels visually from some distance, or you need large views for more than one track at a time, Tracktion has a large meter mode. To activate it, click the **options** button in the control panel, and choose the **show big input level meters** menu option. You can also toggle the large meter mode by using the keyboard shortcut: **CTRL** + **ALT** + **M** (or for Mac users, **CMD** + **CTRL** + **M**).

To hear the audio, arm the input, click on it to display its properties, and ensure the **enable end-to-end** option is selected. This will allow you to hear the audio received by the input even when playback is stopped. If you can see from the input meter that audio is being received by this input, but even with **enable end-to-end** active you can't hear anything, check that the e-to-e option in the transport section is also active.

Now that you can audibly and visually monitor you input, the final step is to adjust your levels for the optimum gain structure. While it is possible to adjust the input gain on the input properties, it is far better to adjust the signal level at source. If the signal reaching Tracktion is too quiet, increasing the gain will raise the noise-floor too. If, on the other hand, the signal is too loud, digital clipping will occur at the analogue to digital converters (ADCs) of your audio input device. Once this clipping is present, it cannot be removed, and will still be present even if you lower the **input gain** control in Tracktion. Digital clipping is extremely unmusical, and should be avoided wherever possible.

To get the ideal recording level, start by setting Tracktion's input gain to 0 dB, and adjusting the levels of the source material such that the signal in Tracktion never reaches the 0 dB line on the input meters. With modern 24-bit audio converters, leaving yourself 5 dB of headroom will not dramatically lower the resulting quality, but will give you a good amount of protection against peaks and spikes in the recorded material.

Tip: By setting the trigger level parameter of the audio input's properties, Tracktion can be set to start recording only when the incoming signal rises above the specified threshold.

If you want to record along to a click-track, you can start the click at any time by selecting the **turn on click track** option from the click track button's pop-up menu. You can also use the keyboard shortcut key **C** to toggle the click-track on and off.

The other options available from the click track button allow you to set the click to your taste. In particular, you may want to check the **pre-record count-in length** value, as this defines the amount of time click track plays before recording starts. More information on working with the click-track can be found in Chapter Six.

OK, you're ready to begin recording. Section Three of this chapter explains the various record modes available to you, and how to use them.

5.2 : Assigning And Preparing A MIDI Input

To select a MIDI input device, simply click on the shaded input region to next to the name of the track on which you wish to record. A pop-up menu will be shown, and from it you can select the desired input device (Fig. 5.2.1). If the device is already assigned to another track, you can instead simply drag the input icon to this track.

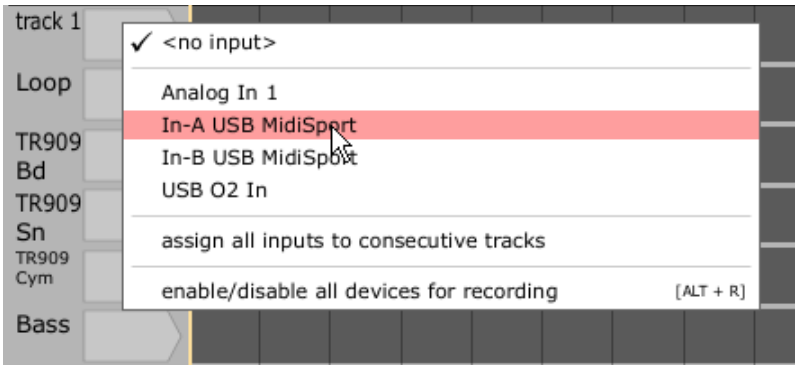


Figure 5.2.1

Input devices can be enabled or disabled by clicking the large red “R” icon (Fig, 5.2.2). If the icon is solid red, then the input is armed. Otherwise, if the icon is non-solid the input is disabled. Ensure that your input is armed.

Figure 5.2.2

You can use the **enable all devices for recording** option from the input pop-up menu to quickly enable all inputs. The **disable all devices** option correspondingly disables all inputs. The **ALT** + **R** (**CTRL** + **R** for Mac users) keyboard shortcut can also be used to toggle all inputs on and off.

At this point you are almost ready to start recording. You should first check that the input is receiving MIDI input by triggering some notes on your MIDI controller. If the input is receiving the MIDI OK, the level meter on the input icon’s surface will display a signal. The signal level responds to MIDI velocities.

The MIDI input device also has a few settings that are worth checking before making a recording. Select the MIDI input device and check that all 16 of the numbered **midi filter** toggle buttons are active, and set the **channel** and **program** fields to none (Fig. 5.2.3). This is a good default state to use, unless you know that these options need to be set differently for the current session.

Figure 5.2.3

If you want to record along to a click-track, you can start the click at any time by selecting the **turn on click track** option from the **click track** button’s pop-up menu. You can also use the keyboard shortcut key **C** to toggle the click-track on and off.

The other options available from the **click track** button allow you to set the click to your taste. In particular, you may want to check the **pre-record count-in length** value, as this defines the amount of time click track plays before recording starts. More information on working with the click-track can be found in Chapter Six.

OK, you're ready to begin recording. Section Three of this chapter explains the various record modes available to you, and how to use them.

5.3 : The Recording Modes Explained

Normal Recording Mode

When Tracktion is in the normal recording mode, recording will start as soon as playback is activated. You can position the play-head cursor at any point before playback starts, so you can use this to start recording at a specified point.

Generally the normal recording mode is best suited to jamming sessions when there is no existing song structure, or you want to be able to record without defined start and stop points.

Recording in this mode is simply a case of setting up and arming an input as described in the earlier sections of this chapter, and when ready, clicking the record button in the transport section. When you are ready to stop recording, you can either click the record button again, or you can click the stop button.

If you select the recording input device, you can customise how Tracktion deals with existing clips that would be overwritten by the recording. MIDI inputs have an option in the device properties called **action**, and audio inputs have a corresponding option in the device properties called **record mode**. Despite the different names, both of the options are essentially the same. You can opt to have Tracktion either overlay existing clips with the newly recorded material, or replace existing clips with newly recorded material.

MIDI inputs have an additional option that allows you to merge the recorded material into existing clips, which allows you to build up a complex arrangement over successive loops, or takes.

The final option, which is available to both MIDI and audio input devices, is to not make a recording at all. This option is discussed in later in this section.

To record in normal mode, simply:

- Enable or disable the loop option in the transport section.
- Disable the punch option in the transport section.
- Select the input device and ensure that the recording mode/action is set to either overlay clips, replace clips, or merge clips.
- Place the play-head cursor at some point before the location at which you wish to start recording.
- Press the record button in the transport section.

Tip: If you wish to use Tracktion's safe record mode, you can activate it from the options button menu. When safe recording is active, you will need to use a special key-combination to halt recording. This protects you from accidentally knocking the **SPACEBAR** key, or clicking the stop/record buttons and terminating a recording session. The key-combintaion needed to stop recording will be shown on the screen while recording is in progress.

Punched Recording Mode

When Tracktion is in punched recording mode, recording will start when the play-head cursor reaches in the in-marker. Correspondingly, it will stop when the play-head cursor reaches the out marker.

You can position the play-head cursor at any point before the in marker before starting playback.

Loop mode must be disabled to use punched recording as the in and out markers are used to define the punch points.

If you select the recording input device, you can customise how Tracktion deals with existing clips that would be overwritten by the recording. MIDI inputs have an option in the device properties called **action**, and audio inputs have a corresponding option in the device properties called **record mode**. Despite the different names, both of the options are essentially the same. You can opt to have Tracktion either overlay existing clips with the newly recorded material, or replace existing clips with newly recorded material.

MIDI inputs have an additional option that allows you to merge the recorded material into existing clips, which allows you to build up a complex arrangement over successive loops, or takes.

The final option, which is available to both MIDI and audio input devices, is to not make a recording at all. This option is discussed in later in this section.

To record in punched mode, simply:

- Disable the loop option in the transport section.
- Enable the punch option in the transport section.
- Select the input device and ensure that the recording mode/action is set to either overlay clips, replace clips, or merge clips.
- Place the in and out markers at the desired record start and end times.
- Place the play-head cursor at some point prior to the in marker.
- Press the record button in the transport section.

Looped Recording Mode

When Tracktion is in looped recording mode, playback will loop between the in and out markers as in regular looped playback mode. For each loop iteration, a new recording will be created. Unlike with normal mode recordings when in loop mode, the existing recordings will not be audible, so each loop cycle plays as if there is no previous content on the record track.

When recording starts, playback will commence immediately from the in marker.

When recording is finished, a special clip will have been created that contains each loop cycle as a single take. The takes are available from an pop-up menu accessible from the clip (Fig. 5.3.1).

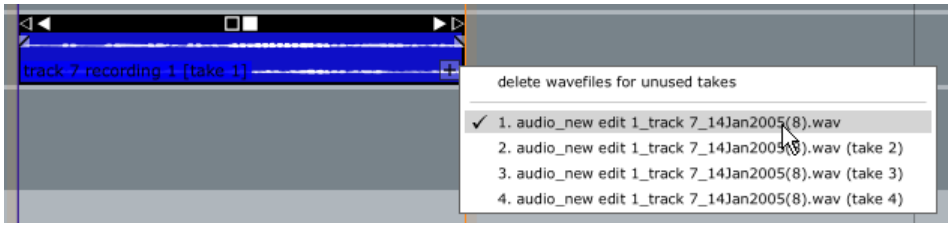

track 7 recording 1 [take 1]
delete wavefiles for unused takes
1. audio_new edit 1_track 7_14Jan2005(8).wav
2. audio_new edit 1_track 7_14Jan2005(8).wav (take 2)
3. audio_new edit 1_track 7_14Jan2005(8).wav (take 3)
4. audio_new edit 1_track 7_14Jan2005(8).wav (take 4)

Figure 5.3.1

To access the pop-up menu, click on the special “+” icon that will be shown on the recorded clip. Looped recording can be done for both audio and MIDI inputs. In the latter case, be sure the MIDI input action is set to **overlay new clips containing newly recorded MIDI** to create a MIDI loop clip.

To record in looped mode, simply:

- Place the in and out markers at the desired loop start and end times.
- Disable the punch option in the transport section.
- Enable the loop option in the transport section.
- Click the **record** button in the transport section.

Live Monitoring Without Recording

Strictly speaking, this is the very opposite of a recording mode, but it is essential when playing live through an input while recording from another input. In the case that you don’t want to record through one or more inputs but do need live monitoring through them, you can:

For MIDI input devices:

- Select the MIDI input device.
- In the device properties, set the **action** field to **end-to-end from this device but don’t actually record**.

For audio input devices:

- Select the audio input device.
- In the device properties, set the **record** mode to **don’t make recordings from this device**.

When this setting has been selected the input device will act as a pass-through, rather than a recording device.

One common scenario where this can be useful is when working with external MIDI equipment. If you have a control keyboard that is passing through Tracktion to the external MIDI instrument, and you are also feeding the audio from the instrument back into Tracktion for mixing purposes, then attempts to record the MIDI performance would also record the audio too. This is most likely not what you are looking to do. By setting the audio input to the do-not-record mode, the MIDI can be captured while still hearing the result in real-time, but no audio recording will take place.

Another common example of when this feature is often needed is when recording a band. In many cases you will need to be able to monitor the vocalist, but you may not want to record them as you will be recording them in isolation later.

On the other hand, hard disk space is more cost-efficient these days, so you might as well record everything so you don’t inadvertently miss that perfect take.

Step Recording Mode

Step recording is a special function of the MIDI editor that allows you to use an external controller keyboard to enter MIDI notes into the editor rather than pasting them in with the mouse.

This recording mode is described in Chapter 4.4.

Chapter 6: The Time-line, Synchronisation, And Snap To Grid

Chapter Contents

6.1 : The Time-line, And Snap-To-Grid Quantising
6.2 : The Global Track, And Setting Tempos, Keys, And Time Signatures
6.3 : The Markers Track, And Markers
6.4 : The Timecode Button Options
6.5 : The Click Track, And The Click Track Button Options
6.6 : Synchronising Tracktion With External MIDI Devices
Working With MIDI Clock
Working With MIDI Timecode
MIDI Machine Control (MMC)
6.7 : The Movie Window, And The Movie Button Options

6.1 : The Time-line, And Snap-To-Grid Quantising

Tracktion's time-line bar serves two purposes. The first, and most obvious, is to give you a visual reference by which you can arrange your songs. The second, and for people familiar with other sequencers, perhaps rather surprising purpose, is that the time-line also controls the grid that snap-to-grid utilises.

Figure 6.1.1 shows the time-line bar.

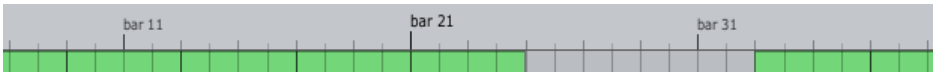


Figure 6.1.1

Note: Right-clicking on the time-line bar shows a pop-up menu that offers the same options as are available from the timecode button in the control panel. Section Four of this chapter details those options.

When snap-to-grid is enabled, the size of the grid is automatically adjusted to match the divisions shown on the time-line bar. If you want snapping to work at 1/16 resolution, simply zoom in such that the time-line divisions are no larger than 1/16th.

Figure 6.1.2 shows how it works. In the image on the left, the snap resolution is 1/16 of a beat. As you can see, the area between the first and second beats of bar one is divided into 16 tick marks on the time-line. Equally, the second image shows a snap resolution of 1/4 of a beat, and as such there are four visible tick marks for each beat.

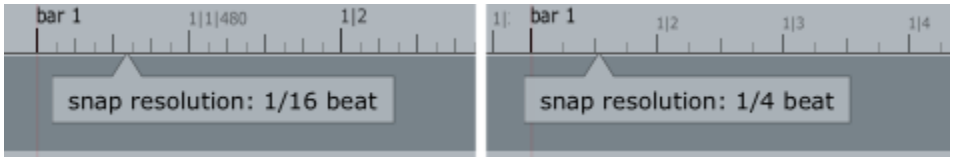


Figure 6.1.2

What this all means in practise is that the snap-to-grid can be relied on to be at the optimum grid size no matter how far you are zoomed into, or out of, the current edit.

Tip: To see the current snap resolution in the pop-up form shown in Figure 6.1.2, simply position the mouse pointer over the time-line for a few seconds.

You can use your mouse-wheel, or the **CURSOR UP** / **DOWN** keys to adjust the current zoom level. In addition you can use the **F4** key to zoom to the selected clip, or the **F7** key to zoom to a few seconds either side of the cursor.

By using either the mouse wheel, or the **CURSOR UP** / **DOWN** keys, you can zoom into, and out of, the edit very quickly.

When dragging or editing clips and MIDI, holding down the **CTRL** (**CMD** for Mac users) key temporarily toggles the state of the snap-to-grid mode.

Holding down the **SHIFT** key whilst moving clips or MIDI notes locks them to their current offset. This is particularly useful with MIDI notes, as it makes it easy to transpose the notes without losing their groove.

Chapter 3.3 contains useful information on navigating around inside edits that you may want to refer to if you have not yet done so, or if you simply need a refresher on the subject.

The snapping button in the control panel (Fig. 6.1.3) provides some options for controlling snapping and quantising behaviour.

Enable snapping: This option toggles whether clips and MIDI events snap to the current grid.
Keyboard shortcut: Q.

Snap clips to neighbours: This option toggles whether clips will snap to edges of neighbouring clips. When enabled, snapping occurs even if the neighbouring clip boundaries are not themselves snapped to any grid.

Snap cursor movement: This option toggles whether the playhead cursor snaps to the current grid when manually repositioned.

Edit groove templates: Displays the groove template editor. The groove template editor is described in Chapter 4.5.

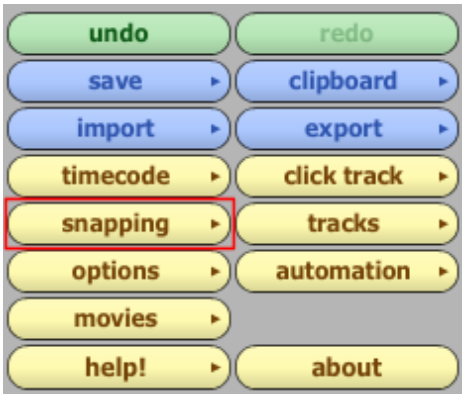


Figure 6.1.3

6.2 : The Global Track, And Setting Tempos, Keys, And Time Signatures

The **global track** (Fig. 6.2.1) displays time signatures and keys alongside a tempo change curve, making it easy to to keep track of key changes and tempo changes in your edit. To enable the global track, click the **global** button at the top right hand corner of the edit page.

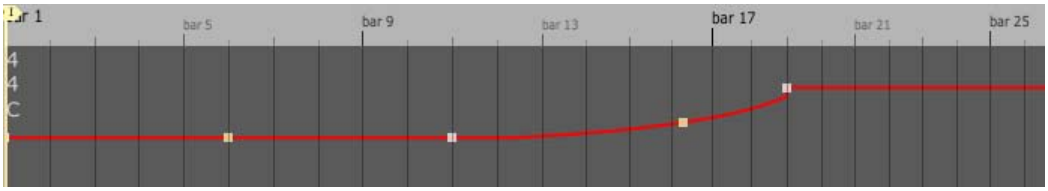


Figure 6.2.1

Figure 6.2.1 shows a tempo curve, the current time signature, and the current key. The time signature and key are shown on the left of the image.

Once the global track is visible you can also use it to easily add and adjust tempo changes. The curve shown in Figure 6.2.1 is the tempo of the edit. Note that the spacing between the bar divisions is proportional to the tempo at each point on the curve.

You can insert new tempo changes by either double-clicking on the curve at the desired insertion point, or by clicking on the tempo field in the transport section, and using the **insert tempo change at cursor** option (Fig. 6.2.2) in the tempo properties to insert a new change at the current position of the play-head cursor.

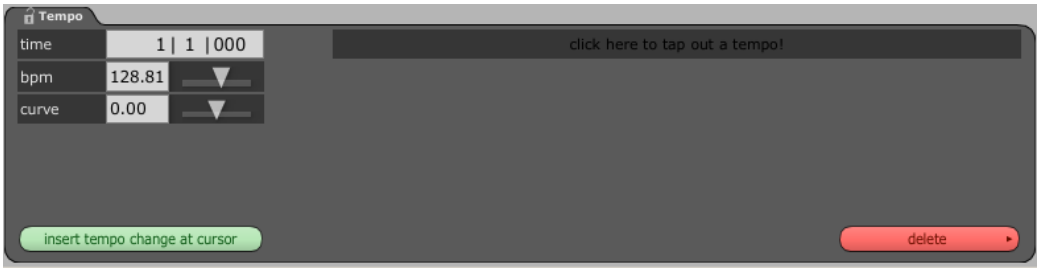


Figure 6.2.2

Note that each tempo change on the tempo curve has a third node located between the two ends of the tempo range. This handle can be used to adjust the tempo curve between this tempo change and the next. This allows you to create smooth tempo ramps.

You can also access the properties by clicking on a point on the tempo curve in the global track. Be careful to click on a node, as the curve itself will display another set of properties (Fig. 6.6.3).

You will also find the following options in the tempo properties:

Time: You can use this field to view, or adjust the location of the selected tempo change.

BPM: This field allows you to view or change the tempo.

Curve: This option controls the rate at which the tempo will change. A value of zero will create an abrupt tempo change at the tempo change point. A value of one will create an abrupt change at the next tempo point. Values in between these points will create tempo ramps of varying curvature between this and the next tempo change.

Click here to tap out a tempo: This pad allows you to set a tempo by clicking the pad at the desired speed.

Insert tempo change at cursor: This option will insert a new tempo change at the current position of the play-head cursor.

Delete: This button displays a pop-up menu with the following options:

- **Delete this tempo setting:** The current tempo change will be deleted.
  Keyboard shortcut: DELETE or **BACKSPACE**.
- **Delete all tempo changes from the edit:** All tempo change points will be deleted.

If you click anywhere on the tempo curve that does not contain a tempo change node, you will see the tempo curve properties (Fig. 6.2.3). The curve properties provide tools for copying and pasting tempo changes.

Figure 6.2.3

Displace curve: The displace curve control moves the curve upwards or downwards. To dispace the curve, click and drag on the drag control to the right of the value. As you drag, the value will reflect the current displacement value. Once you have finished dragging, the displacement value will be added (or subtracted) from the curve. For example, to add 10 BPM to all tempos in the edit, simply drag this value to +10. Once the mouse button has been released, the value field will reset to +0.00.

Scale curve: This control allows you to apply a scale factor to all BPMs in the edit. For example, if the scale value is x 0.50, all BPMs in the edit will be halved.

Only displace/scale the marked region: When this option is selected, the displace and scale controls will only operate on nodes within the marked region.

Delete points from curve: Clicking this button will display a pop-up menu with the following options:

- **Delete all points from the curve:** When this option is selected, all nodes will be deleted.
- **Delete points in the marked region:** When this option is selected, any nodes between the in and out markers will be removed.
- **Delete points in the marked region and close the gap:** When this option is selected, any nodes between the in and out markers will be removed. In addition, the points located after the out marker will be moved towards in the in marker by a distance equal to the marked range.

Copy marked region to clipboard: The points between the in and out markers will be copied to the clipboard.

Paste from clipboard: Points that have been previously copied can be pasted into the curve at a different location:

- **Paste at the cursor position:** The copied points will be pasted into the curve at the current playhead cursor location.
- **Paste into the marked area:** The copied points will be pasted into the region between the in and out markers, and will be scaled to fit. For example, if the copied region was only two bars long, but the in out markers specify a region of four bars, the pasted points will simply be scaled to span four bars.

If you click on the time signature in the transport section, or in the global track, you will see the properties (Fig. 6.2.4) for the selected time signature.
Time: You can use this field to see, or adjust the location of the selected time signature change.

Figure 6.2.4

Time sig: This field allows you to view or change the time signature. Changes to the time signature will be reflected in the timeline ruler.

Triplets: This option switches the time signature into triplets. When a time signature is set in triplets, the beat divisions for that time signature are shown in triplet time. When a time signature is set to use triplets, the quantise and snapping grid will be in triplet time also.

If a time signature is set to use triplets, and is surrounded by two time signatures that aren't using triplets, only that centre time signature region will be shown using triplets.

Inert time signature at cursor: This option will insert a new time signature at the current position of the play-head cursor.

Delete: This button displays a pop-up menu with the following options:

- **Delete this time signature:** The current time signature will be deleted.
  Keyboard shortcut: DELETE or **BACKSPACE**.
- **Delete all time signatures from the edit:** All time signatures will be deleted.

If you click on the key in the transport section, or in the global track, you will see the properties (Fig. 6.2.5) for the selected key.

Figure 6.2.5

Time: You can use this field to see, or adjust the location of the selected key change.

Pitch: This field allows you to view or change the key.

Insert pitch change at cursor: This option will insert a new key change at the current position of the play-head cursor.

Delete: This button displays a pop-up menu with the following options:

- **Delete this pitch change:** The current pitch change will be deleted.
  Keyboard shortcut: DELETE or **BACKSPACE**.
- **Delete all pitch changes from the edit:** All pitch changes will be deleted.

6.3 : The Markers Track, And Markers

Markers are a convenient tool for structuring edits. Typically they are used to mark sections of a song such as bridge, or verse, or to place synchronisation points when working with video. At their most simple, you can think of them as bookmarks or reference points.

There are two ways of accessing markers: the first is through the quick find panel, which we will look at in a short while; the second method is through the marker track, which we will look at now.

To activate the marker track, click the **marker** button at the top right corner of the edit page. Now, with the marker track visible, click the name area of the marker track to select it. This will display the marker properties (Fig. 6.3.1).

Figure 6.3.1

To add a new marker, click one of the new marker buttons in the properties panel. There are two types of marker available: bars and beats markers, and absolute timecode markers. The primary difference between the two types is that beats and bars markers will retain their position with respect to the beat and bar position in an edit, if the tempo is changed. For example, if a beats and bar marker is placed at the start of bar three, and is one bar long, after a tempo change, the marker will still be located at the start of bar three, and be one bar long. Obviously the marker will be positioned differently against the absolute timecode timeline. By contrast, absolute timecode markers will maintain a fixed relationship to the absolute timecode timeline, despite tempo changes, and as such will appear to move in relation to the beats and bars timeline.

Typically, bars and beats markers are used to bookmark song sections, and absolute timecode is used when synchronising to events that are not musically timed, such as video.

Tracktion supports up to 999 markers.

A handy shortcut method to adding new markers is to type a number for the marker you wish to add followed by the enter key. For example, to add a marker numbered 20, type **2**, followed by **0**, and finally **ENTER**. As you type, the number you are entering will be shown in the tip bar, just to the left of the maximise and minimize buttons.

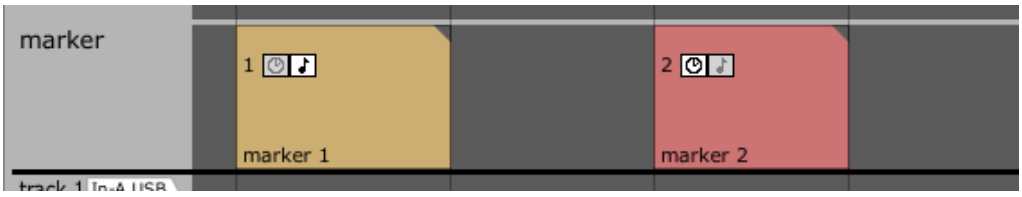


Figure 6.3.2

The marker track can also be switched between combined and separate mode. Combined mode shows beats and bar markers on the same track as absolute timecode markers (Fig. 6.3.2). Separate mode shows them on distinct tracks (Fig. 6.3.3). To switch between these modes, simply click the appropriate toggle button in the marker track properties. The third option, **hidden**, hides the marker track. This is simply a shortcut alternative to clicking the **marker show / hide** button.

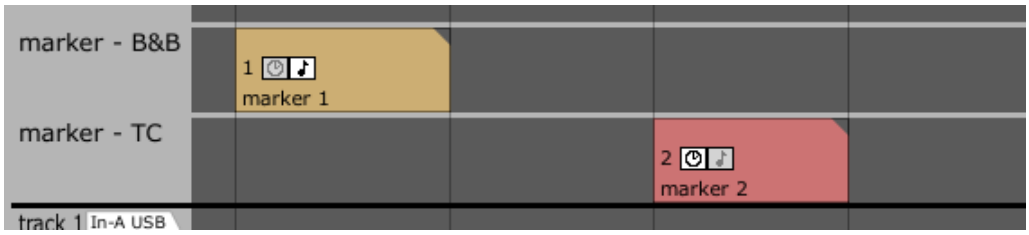


Figure 6.3.3

The markers are shown in the markers tracks as standard clips, with one corner bevelled. They can be dragged, and resized in the same way that normal clips can be. They can also overlap other marker clips if desired.

If you have the marker track set to separate (Fig. 6.3.3), dragging marker clips between the two marker tracks will also switch them from one type to the other.

You can select individual markers by clicking on them. When a marker is selected, its properties will be displayed in the properties panel (Fig. 6.3.4).

Figure 6.3.4

Number: This field shows the number associated with the marker. Each marker has a unique number in the range of one to 999. No two markers can share the same number. If you attempt to assign a number to a marker, and that number is already in use by another marker, the other marker will be automatically assigned a new number.

Type: You can select whether this marker will act as a “bars and beats marker” or an “absolute time code marker.” You can also change the type by clicking one of the two toggle icons on the clip’s surface. The clock face icon denotes absolute timecode, whereas the quaver icon denotes beats and bars.

Name: This field allows you to give the marker a descriptive name, such as “start of middle eight,” or “Movie: abrupt scene change.” The name is shown on the marker clip surface.

Start: This field allows you to view and edit the start time of the marker. The value will be displayed in either beats and bars, or absolute timecode, depending on the marker type.

Length: This field allows you to view and edit the length of the marker. Markers can be resized just like regular clips. The value will be displayed in either beats and bars or absolute timecode depending on the marker type.

End: This field allows you to view and edit the end time of the marker. The value will be displayed in either beats and bars or absolute timecode depending on the marker type.

Colour: You can assign a colour to the marker clip. Colours can be useful for grouping clips together, for example red clips might represent key changes, and green clips could be used to represent song sections.

6.4 : The Timecode Button Options

The timecode button (Fig. 6.4.1) displays the following options:

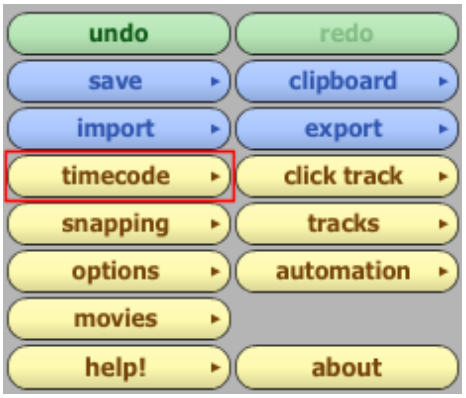


Figure 6.4.1

Show beats and bars: This option sets the time-line to show bar and beat divisions. When this option is selected, clips will show their position and size in beats and bar metrics when viewing their properties. Additionally, the position of the play-head cursor in the transport section will be shown in beats and bars.
Keyboard shortcut: T.

Show seconds/millisecs: This option sets the time-line to show divisions based on seconds and milliseconds. When this option is selected, clips will show their position and size in seconds and millisecond metrics when viewing their properties. Additionally, the position of the play-head cursor in the transport section will be shown in seconds and milliseconds.
Keyboard shortcut: T.

Show seconds/frames: This option shows the time in terms of seconds and frames for video synchronisation. When this option is selected, clips will show their position and size in seconds and frame metrics when viewing their properties. Additionally, the position of the play-head cursor in the transport section will be shown in seconds and frames.
Keyboard shortcut: T.

24/25/30 fps: When the time-line is set to show time in seconds and frames, this control selects how many frame divisions exist for each second. MIDI timecode is also sent to external MIDI outputs at this frame rate (see Section 6.6).

Ignore hours from incoming timecode: When this option is selected and Tracktion is chasing external timecode, the “hours” value of the timecode stream will be ignored. The timecode will instead be indexed with the same hours as the edit.

Change timecode offset: This option allows you to add an offset to the incoming timecode time.

MIDI timecode input device: This option allows you to select which MIDI input should be receiving timecode when chasing is active.

Respond to midi machine control from device: If you want to have Tracktion receive MIDI machine control (MMC) messages, use this option to select which input will be used to receive them. Only one MIDI input device can be assigned to listen for MMC messages.

Send MIDI machine control to device: If you want to have Tracktion transmit MIDI machine control (MMC) messages, use this option to select the output on which they will be broadcast. Only one MIDI output device can be designated as a MMC output device.

Insert tempo change at cursor: Select this option to insert a new tempo at the current play-head cursor position.
Keyboard shortcut: CTRL + **E** (**CMD** + **E** for Mac).

Default remapping options: This option displays a sub-menu from which you can set whether audio clips, auto tempo enabled audio clips, and MIDI clips, should be remapped on tempo changes. When remapping is enabled, by default the position and length of the clip will be updated to keep its beats and bars fixed in relation with the timeline. When disabled, no remapping will take place, which would keep the clip fixed in relation to the absolute timecode timeline.

Tip: Right-clicking on the time-line bar will display the pop-up menu available from the timecode button.

6.5 : The Click Track, And The Click Track Button Options

The click-track provides a metronome for you to play along to when playing or recording live.

A number of menu options are available for customising the click-track to your needs. These options can be accessed by clicking the **click track** button (Fig. 6.5.1).

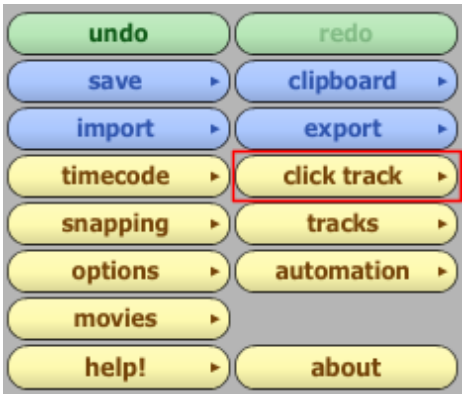


Figure 6.5.1

Turn on click track: This option toggles whether the click track is currently enabled. The click-track will only be heard during playback or recording.
Keyboard shortcut: C.

Pre-record count-in length: This control allows you to set a period of click track time before recording starts. When this is set to a value other than “none,” the click will begin a few beats or bars before the recording mode is activated.

Output device for click: Use this setting to choose the output to which the click track is sent. If you choose an audio output, Tracktion will play a sample for the click sound. If you choose a MIDI output, Tracktion sends a MIDI note to the selected device for each click. The waveform, or MIDI patch, can be configured from the **click track settings...** option.

Low / medium / high volume: Use this option to adjust the volume of the click track.

Only click during recording: When this option is enabled the click-track will only be active when recording, otherwise the click-track will be heard during normal playback and recording.

Use loud clicks to emphasise bars: When this option is selected, the first beat of a bar will be emphasised by a louder click.

Change click settings: This option displays a window from which you can configure the click sound. The following options are available:

- **MIDI note numbers to use (loud/quiet):** These two options allow you to select the MIDI note that is sent for the loud click, and for the quiet click. The MIDI note will be sent on MIDI Channel 10.
- **Audio files to use (loud/quiet):** These two options allow you to select the audio file that is heard for the loud and quiet clicks. If these fields are left empty, and the output device is an audio device, Tracktion will provide its own click sound.

6.6 : Synchronising Tracktion With External MIDI Devices

Working With MIDI Clock

MIDI clock is the most simple form of synchronisation between two MIDI devices. It carries no time information, just a pulse that effectively stamps out a metronome for other equipment to keep time to. One disadvantage of MIDI clock is that there is no facility for error correction, so it is possible for devices to drift out of time. If you need very accurate synchronisation you should, if at all possible, instead use MIDI timecode.

Tracktion cannot chase MIDI clock, but it can transmit it to any, or all of your MIDI output devices.

To enable MIDI clock on an output:

- Switch to the settings page.
- Select the MIDI group.
- Select the MIDI out device to which you wish to send MIDI clock data (Fig. 6.6.1).
- Enable the **send midi clock** option.

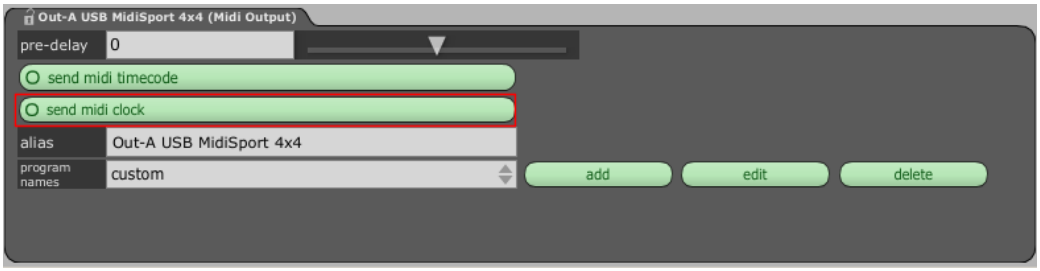


Figure 6.6.1

Working With MIDI Timecode

MIDI timecode is a very powerful synchronisation tool that shares much in common with SMPTE. Where MIDI clock is just a simple metronome, MIDI timecode carries time-of-day information that allows for a degree of error recovery if timing messages are lost. MIDI timecode can even be used to cue actions at certain times.

Tracktion can both send and chase MIDI timecode.

To transmit timecode on a given MIDI output:

- Switch to the settings page.
- Select the MIDI group.
- Select the MIDI out device to which you wish to send MIDI timecode data..
- Enable the **send midi timecode** option (Fig. 6.6.2).

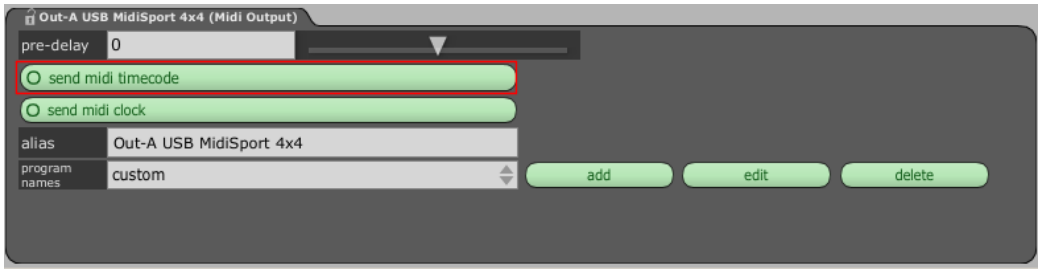


Figure 6.6.2

To have Tracktion chase MIDI timecode:

Figure 6.6.3

- Switch to the edit page.
- Click the **timecode** button in the control panel to display the timecode pop-up menu.
- From the sub-menu of the option **midi timecode input device**, choose the input that is receiving MIDI time-code.
- Activate timecode chasing by enabling the **MTC** located at the top left of the transport section (Fig. 6.6.3).
  Keyboard shortcut: CTRL + **T** (**CMD** + **T** for Mac users).

Further options for working with a timecode are available from the timecode button. See Section Four of this chapter for more information.

MIDI Machine Control (MMC)

MIDI Machine Control provides a mechanism by which one MIDI device can control certain functions, such as transport, on another. It could be used, for example, to synchronise the recording or playback mode of a DAT recorder with Tracktion, or to control Tracktion's transport from a remote MIDI device, or digital mixer.

Tracktion can act as both MMC master and slave. Only one MIDI input and output device can be set to be a slave / master at one time.

To have Tracktion behave as an MMC slave:

- Switch to the edit page.
- Click the **timecode** button in the control panel to display the timecode pop-up menu.
- Select the desired MIDI input device from the sub-menu of the **respond to MIDI machine control from device** option.

Once Tracktion has been set to act as a slave, you will be able to control Tracktion's transport from a remote device. If your device has a transport control section, you should easily be able to start and stop Tracktion's playback remotely. Some MIDI controller can be programmed to send MMC messages, so even if your device does not have a dedicated transport section, you may be able to assign controls on the device's surface for this purpose. For more information, consult the documentation of your MIDI control device.

To have Tracktion behave as an MMC master:

- Switch to the edit page.
- Click the **timecode** button in the control panel to display the timecode pop-up menu.
- Select the desired MIDI output device from the sub-menu of the **send MIDI machine control to device** option.

At this point, your remote MIDI device should be slaved to Tracktion's transport. Starting playback in Tracktion should similarly start playback on your MIDI device too.

6.7 : The Movie Window, And The Movie Button Options

If you need to score music or sound to a video, Tracktion offers a synchronised QuickTime movie display. This display will show a QuickTime movie file in frame accurate synchronisation with your work. In addition, you can have the time-line display time in terms of frames and seconds if necessary.

To select a movie file and display the window:

- Select the **set QuickTime movie file** option from the movies button pop-up menu (Fig. 6.7.1).
- You will be prompted to select a QuickTime movie file to play. Navigate the file on your hard-drive.
- When you have selected a movie file, you may be prompted if you want to copy it to your projects folder. If you choose yes, a local copy will be made, which helps to keep your projects items all together.
- Once you have selected a suitable movie file, the movie window will appear.

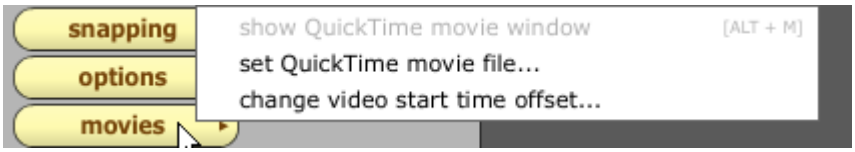


Figure 6.7.1

If you need to offset the start time of the movie from the start time of your edit, select the **change video start time offset** option from the movie button pop-up menu, and enter the beat and bar position at which you want the video to begin.

The time-line can be switched to frames and seconds from the timecode button options, or by using the keyboard shortcut: **T**. From this pop-up menu you can also select the frame rate that will be shown in the time-line. The timecode options are described in Section Four of this chapter.

The movie window can be moved around by click-dragging it to the desired location. If you have a dual monitor set-up you could drag the movie window to the second monitor, and choose the **keep window on top** option to make the window persistent.

Right-clicking on the video window displays a pop-up menu (Fig. 6.7.2) with the following options:

Hide window: This option dismisses the window.

Keep window on top: Select this option if you want the movie window to remain on top of other applications even when it doesn't have focus.

Size options: You can choose the size of the movie window as a ratio of the current movie's image size.

Mute QuickTime audio track: When this option is enabled, any audio contained in the movie file will be muted. The audio will still be played at the computer system output, which may be different than the audio output used by Tracktion.

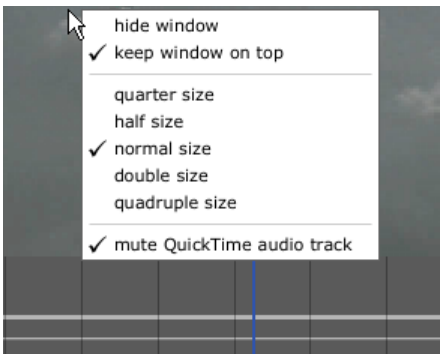


Figure 6.7.2

Chapter 7: Mixing And Mix Automation

Chapter Contents

7.1 : An Overview Of Mixing With Tracktion
7.2 : Sub-mixes And Effects Sends
7.3 : Mix Automation
Creating Automation Curves
Editing And Deleting Automation Nodes
The Automation Lock Mode — Locking Automation To Clips
Recording Automation Changes Live
The Automation Button Options
7.4 : Using Control Surfaces
Installing And Configuring A Control Surface
Creating A Custom Control Surface
Using The Mackie Control Universal
Using The Mackie C4
Using the Remote SL
Using the Frontier Design Group Tranzport

7.1 : An Overview Of Mixing With Tracktion

You may recall from Chapter 3.4 that Tracktion's filter section provides the facilities by which you can mix your edits. From setting levels, applying EQ, and adding reverb to a track, it will all be performed in the filter section. If you have not yet read Chapter 3.4 it is probably worth doing so now, as it explains many key concepts that you will build on throughout this chapter.

The first thing that may come as a surprise if you are used to other sequencers is that there is no mixer view. The filter section is the mixer, and due to its extensible nature, it allows you to do many things that would not be possible with a standard mixer approach. If this still doesn't make sense, try simply imagining Tracktion's filter section as being a mixer that has been turned through 90 degrees.

So, mixing in Tracktion, as with any sequencer, or even hardware environment, is simply a case of using the vol / pan filter to set the level and stereo position of a track, and adding a few extra filters to treat audio with, say a little chorus, reverb, EQ, and compression.

Of course there's a bit more to mixing than just that. Sometimes, for example, you need to vary mix parameters over the course of the song, or have effects on one track react to changes on another. The rest of this chapter will provide you with guidelines on how to do these kinds of things in Tracktion, as well as some tools that can make the mixing process easier.

7.2 : Sub-mixes And Effects Sends

The first thing we will look at is setting up sub-mixes (sometimes called group mixes, or bussses) and effects sends in Tracktion. You have already seen a little about both of these topics in previous chapters. Here we will review what these terms mean, and a little about how they work.

After the simple default track routing that you have already encountered, the next easiest type of effects routing in Tracktion is the sub-mix. A sub mix basically refers to having a group of tracks being fed into some kind of master track. In the hardware world this would often be achieved by cascading mixers; for example, a single 8 channel mixer might be used for micing up a drum kit, another mixer would be used to catch the vocalist along with some room reverb, and so on. Each of these mixers would then be fed into one master mixer which would be used to set the overall level for each member of the band. Larger mixers make this easier by having internal busses where you can route multiple tracks as a

group, process them all, and then send them on to the main LR.

In Tracktion, you create sub-mixes by changing the output destination of one or more tracks from an audio output device to another track. For example, if tracks one to four in your edit contain percussive parts, you could designate track five to be the sub-mix master track. In this way, any effects or level changes that are applied to track five will cascade down to tracks one through four also.

In short then, to set up a sub-mix:

- Mentally choose a track to be the master mix track for your sub-mix.
- Select one or all of the tracks that you wish to make part of a sub-mix.
- In the properties panel set the track destination of the selected track(s) to the track that you elected to be the master mix (Fig. 7.2.1).

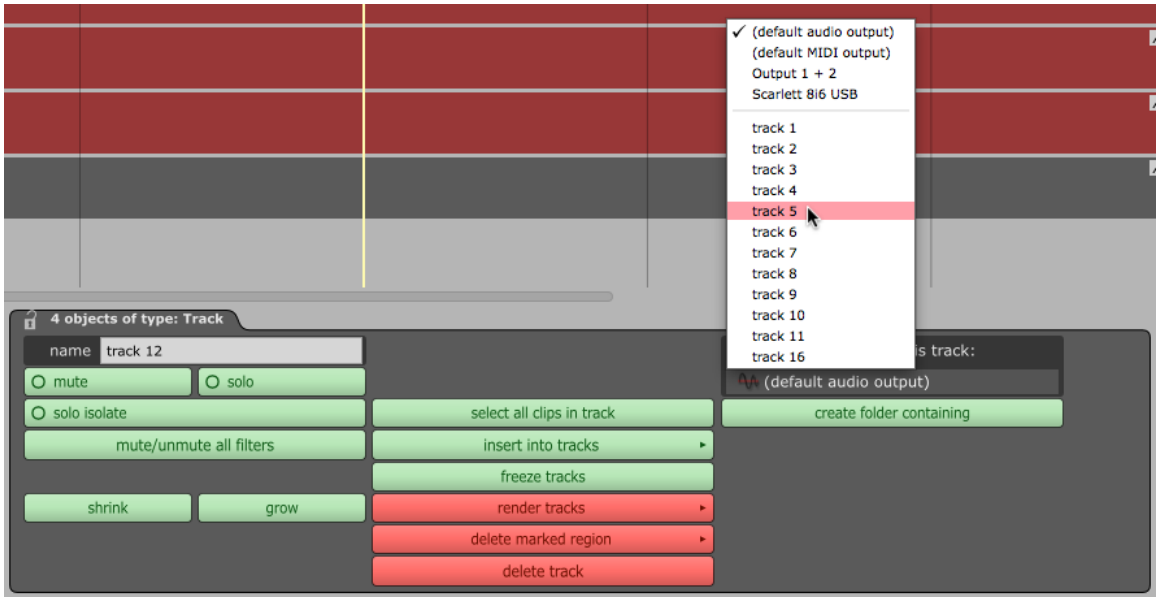


Figure 7.2.1

You can even cascade your sub-mixes, by send the output of sub-mix master track into another sub-mix. For example, you could have three tracks feeding into one mix track, and four into another, then feed the two mix tracks into a third master mix track.

Setting up effects sends in Tracktion is a little more involved, and in fact there are two different ways to do it. The standard way is to use the aux send / return filters. How to do this is detailed in Chapter 3.4, where you find a complete walk-through of working with these filters. If you are unsure how to use the aux send / return filters, please refer back to that part of the reference manual. In summary however, to use them you simply place a send on the tracks to which you want to apply a send effect, and on a designated return track, you will place an effect filter, and a return filter in that order.

The send/return filters make a powerful and flexible approach to adding auxiliary sends to tracks, but if you want even more flexibility, you can use rack filters. Rack filters are an extremely powerful and creative tool, and they allow you to go far beyond the normal approach of chained insert effects. They are so powerful in fact that they have an entire chapter (Chapter Nine) dedicated to them. You can use rack filters to create custom auxiliary sends, and to allow filters to react to events on other tracks (side chain compression, for example).

7.3 : Mix Automation

Creating Automation Curves

Mix automation describes the process of having mix parameters vary along the time-line of your edit. For example, you may want the percussion to drop slightly in level when the chorus starts to make way for an increase in background instrumentation. You may also want to increase the amount of chorus and reverb applied to the backing vocals, during the chorus section. Alternatively, for electronic and experimental music, you may want to vary settings like cut-off and resonance on your virtual instruments. Mix automation allows you to do all these things, and more.

There are a number of ways of creating automation curves. Points can be manually created, moved, and edited, both during play-back and when play-back is stopped. Alternatively, they can be recorded in real time both by making changes to filter parameters on screen, or by recording changes from hardware controllers such as MIDI controllers and control surfaces. Both of these hardware approaches are discussed later in this chapter, but for now let's look at editing automation curves just in Tracktion.

Automation curves can be activated by clicking on the "A" symbol at the top-right-hand corner of every track (Fig. 7.3.1). The pop-up list will show you all of the automatable parameters for the current track, as well as parameters for master filters such as the master volume / pan control. Automation curves can be hidden by clicking on the "A" symbol, and selecting the hide automation curves for this track option. This does not disable or lose the curve, it's purely a cosmetic thing, and can help avoid making inadvertent changes to an automation curve through accidental mouse clicks..

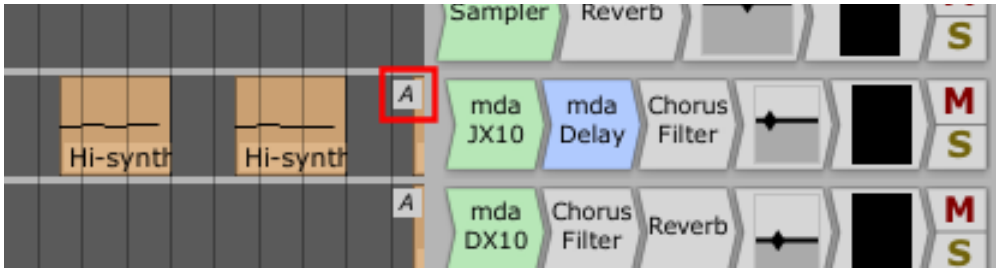


Figure 7.3.1

You can also drag the "A" icon onto a filter icon and drop it there to see only automatable parameters for that filter. This can be particularly handy when a track contains a number of filters, or if there are a few filters of the same type on the track, and you wish to be sure that you are selecting the correct one to automate.

A further useful trick that is available when dragging the "A" icon to a filter surface is that you can view automation curves on any track, rather than just the track that contains the filter. For example, you could drag the "A" icon from track #2 to a delay filter on track #4. This would allow you to see the automation curve for the delay on track #2, even though the delay is on track #4. So, why would you want to do this? Perhaps the most useful aspect of this feature is that you can see more than one automation curve for a track at once. Let's say you wanted to see both the automation for track #1's volume, but you also wanted to see the pan curve for that track alongside it. With the draggable "A" icon, this is easily achieved: simply show the volume curve as normal, then drag the "A" icon from track #2 to the vol/pan filter on track #1, and select the pan parameter. You'll now have both parameters for that filter visible at once.

The important thing to take from this is that automation curves belong to a filter, not a a track. This means that if you move a filter from one track to another, you can be sure that the automation curves associated with it will follow along.

With that all said, let's look at the actual curves themselves. An automation curve is made up of a series of automation nodes. Each node forms a breakpoint on the automation curve. Once a parameter has been chosen by using one of the methods described above, an automation curve will appear on the track. Initially, the curve will actually be a horizontal line, because there are no automation nodes. To create a new node on the curve, double-click the curve (or **ALT** + click), and drag the new node up or down to adjust the level.

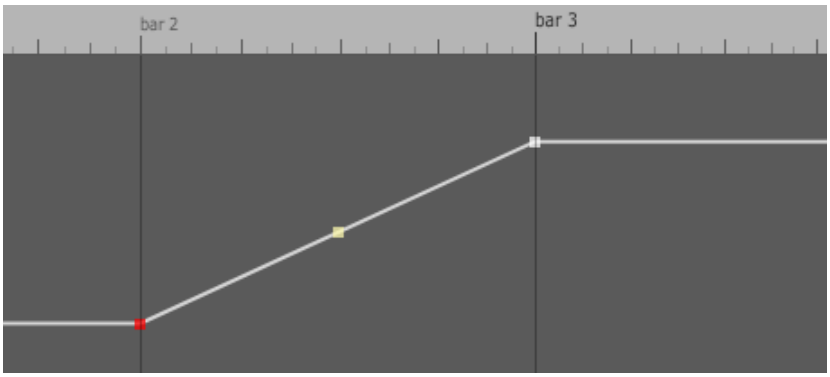


Figure 7.3.2

For example, to create a volume ramp between bars two and three (Fig. 7.3.2), you would simply:

- Click the "A" icon for the track to be edited.
- Select the **volume and pan** filter >> **volume** parameter from the list. The automation curve for the parameter will now be visible.
- Double-click or **ALT** + click (**CTRL** + click on a Mac) the line at the start of bar two. You should see a new node created under your mouse cursor.
- Double-click or **ALT** + click (**CTRL** + click on a Mac) the line at the start of bar three.
- Drag the node at bar three to a new vertical position.

Between the two nodes at bars two and three, there is a third node. This node is the curve node, and it allows you to adjust the slope between two automation points. If you drag this node left or right, you will notice that the automation curve becomes progressively less linear. At extreme settings, i.e., when the curve node has been dragged as far as one of the two endpoint nodes, the change in level will be an abrupt jump with no ramping at all. Figures 7.3.3 through 7.3.7 show the same automation curve, with various settings for the node, ranging from full left, to full right, via half left, half right, and centred. We will look at the node properties next, where the curve node's value can be set explicitly.

Figure 7.3.3

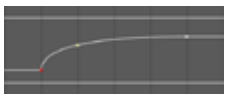


Figure 7.3.4

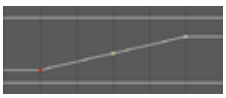


Figure 7.3.5

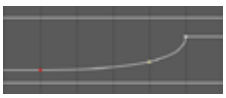


Figure 7.3.6

Figure 7.3.7

Editing And Deleting Automation Nodes

Creating automation curves is all well and good, but there also needs to be tools for editing the curves, and fortunately Tracktion offers quite a number of them. You can easily copy sections of curve and paste them at different one or more different locations, either on the source curve, or on another curve. You can move individual nodes for precise control, or scale the levels of an entire curve, or curve section, for easy control of a number or nodes. You can record automation from mouse movements or MIDI controllers in real time. You can even have automation curves lock to clips so that the section of the curve covered by a clip will follow the clip if it is moved or copied. And finally, of course, you can easily delete nodes, or sections of curves that you no longer need.

Because automation is such an integral part of the mixing process, harnessing the full power of these tools is key to working efficiently. Over the remainder of this section, we will therefore look at the automation editing and recording features available to you in Tracktion.

The first thing we will look at is an individual node. You can see the value of the automation curve at any given node point by clicking on it and looking at the value field in the properties panel (Fig. 7.3.8). Alternatively, you can just hold the mouse cursor over the node, and after a few seconds Tracktion will display a small balloon message with the node value. We will look more closely at the node properties in little while.

Dragging nodes left and right, or up and down, can be used to edit their position, or value respectively. A unwanted node can easily be deleted by simply double-clicking on it.

Figure 7.3.8

When a node is selected, the properties panel will display the properties (Fig. 7.3.8) for that node, and the curve node to the right of it.

Time: This shows the position of the node. You can edit this field to precisely locate an automation node.

Value: This field shows the value of the node. What this field refers to will depend somewhat on the parameter that is being automated. In Figure 7.3.8, the node being edited is on a volume curve, and as such this field shows the level in dB of the volume/pan filter at this automation node.

Curve: This field controls the curve node. It ranges between –1 and 1 (Figures 7.3.3 and 7.3.7 respectively). A value of zero (Fig. 7.3.5) gives a straight ramp.

Delete: When this button is clicked, the automation node will be deleted.

Sometimes you will see an additional display or drop-down box next to the value parameter. This is illustrated in Figure 7.3.9.

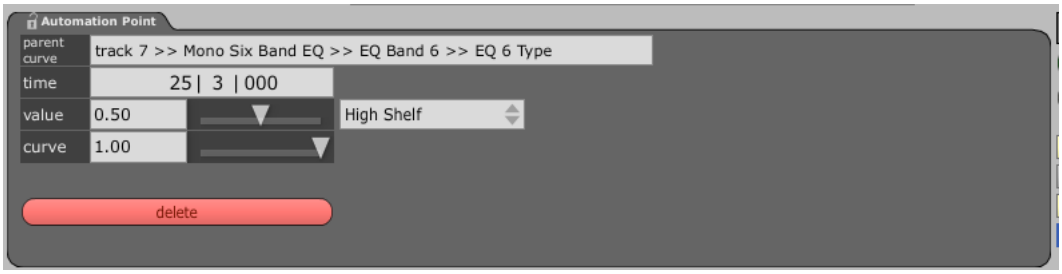


Figure 7.3.9

This is added information about the node value provided by the plug-in. Not all VST plugins will display this; only those supporting the new VST Parameter Structure of VST 2.4.

For those that do fully support it, you will be able to select a value for the parameter from the drop-down list. The example above represents a filter type of High Shelf for the sixth band of the Mono Six Band EQ.

This makes it easier to edit automation of parameters with fixed states. The great news is that you can add this functionality to any VST plug-in by creating a *.vstxml file for it. This is beyond the scope of this manual. See the VST 2.4 SDK (Software Developer's Kit), which is available for download at http://www.steinberg.net.

You can select a group of nodes at once, by either **CTRL** + clicking (**CMD** + click for Mac users) on them, one node at a time. You can also select a contiguous section of the curve by clicking on the first node you wish to select, then **SHIFT** + clicking the final node you wish to select. The two nodes, and all intermediate nodes will be selected.

When two or mode nodes are selected, you can copy them by using the **CTRL** + **C** (**CMD** + **C** for Mac users) keyboard shortcut. Once a section of an automation curve has been copied, it can be pasted into this or another automation curve by placing the play-head cursor at the desired automation point, and using the **CTRL** + **V** (**CMD** + **V** for Mac users) keyboard shortcut. In addition, you can delete the the selected nodes by pressing the **DELETE** key, or clicking the delete button on the properties panel.

In addition to selecting one or more nodes, you can select an entire automation curve by clicking on a section of the curve other than a node point. When an automation curve is selected, the properties (Fig. 7.3.10) for the curve provide a few more automation copying and editing tools.

Figure 7.3.10

Displace curve: This control allows you to raise or lower the values of your nodes. This will simply add or subtract a fixed value from all node points.

Scale curve: This control scales the values of the node. A scale of 0.5 for example would literally halve the value of all nodes.

Only displace/scale the marked region: When this option is selected, only nodes between the in and out markers will be affected by the displace/scale options above.

Simplify: This option reduces the number of automation points on the curve. You can choose to simplify the entire curve or just the marked region using light, medium, or strong simplification. The stronger the simplification, the more nodes are removed.

Delete points from curve: This option provides you with options to remove nodes from the automation curve. There are three options:

- **Delete all points from the curve:** When this option is selected, all nodes will be deleted.
- **Delete points in the marked region:** When this option is selected, any nodes between the in and out markers will be removed.
- **Delete points in the marked region and close the gap:** When this option is selected, any nodes between the in and out markers will be removed. In addition, the points located after the out marker will be moved towards in the in marker by a distance equal to the marked range.

Copy marked region to clipboard: The points between the in and out markers will be copied to the clipboard.

Paste from clipboard: Points that have been previously copied can be pasted into the curve at a different location:

- **Paste at the cursor position:** The copied points will be pasted into the curve at the current play-head cursor location.
- **Paste into the marked area:** The copied points will be pasted into the region between the in and out markers, and will be scaled to fit. For example, if the copied region was only two bars long, but the in out markers specify a region of four bars, the pasted points will simply be scaled to span four bars.

If you want to temporarily disable automation playback, you can deactivate the automation read button in the transport section (Fig. 7.3.11).

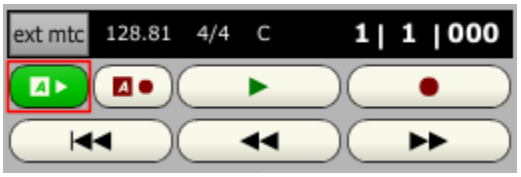


Figure 7.3.11

The Automation Lock Mode – Locking Automation To Clips

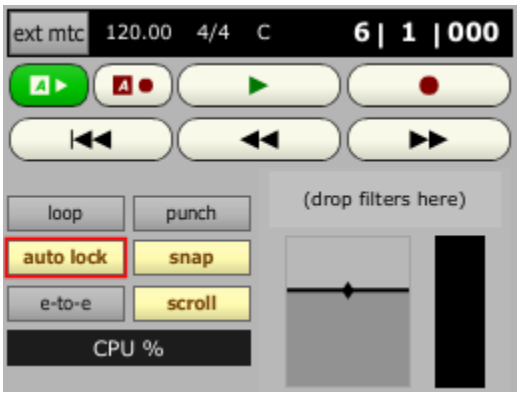


Figure 7.3.12

We've seen some methods for manually copying or moving sections of an automation curve, but there is another handy way of working with curves — the automation-lock mode. When automation-lock mode is enabled, automation nodes from filters on a track will be 'locked' to clips on the same track that overlap them. Copying, moving, or deleting clips will correspondingly copy, move, or delete the nodes that the clip overlaps.

Automation-lock mode can be enabled from the transport section (Fig. 7.3.12). When it is active, all automation curves whether visible or not, will be locked to clips on their tracks. You may recall that automation curves can be shown on any track, so it may not be immediately obvious which track we are talking about here. In short, an automation curve will only lock to clips that are located on the same track as the filter it is automating. Even though the curve may be visible on another track than its filter, it will not lock to the clips on that other track.

Figure 7.3.13 shows the effect of duplicating a clip when automation lock is active. Note that the automation curve has been duplicated too. It may be that what you can't see in this image is more import than what you can see, however. Even though they aren't visible, all automation curves for filters on this track are locked to the first clip, and as such, any nodes on those curves that overlap the source clip would have been copied as well!

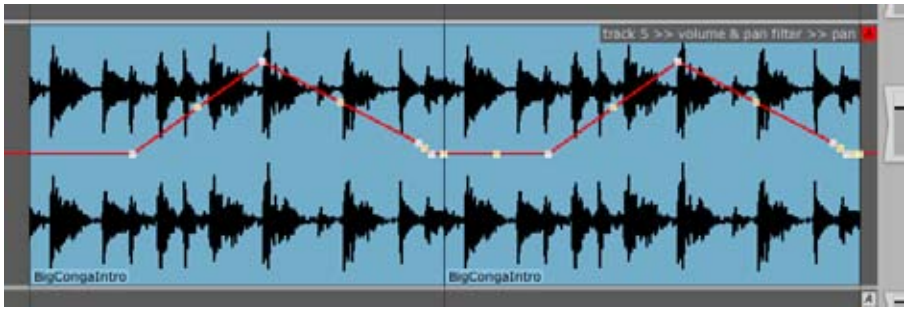


Figure 7.3.13

Automation locking can even be used to copy an automation curve from one track to another. Dragging a clip to which automation nodes are locked onto another track, will cause the nodes to be copied to that track also. Automation curves can only be copied in this manner between filters of the same type. If a clip is copied to a track containing a filter that also exists on the source track, any automation nodes that are locked to the clip will be copied to the destination track.

In some cases you may find automation locking to be faster to work with than manually copying and pasting automation curves. One quick and dirty way to use automation locking as a form of copy and paste is to create an empty MIDI clip, position and size it such that it covers the automation section you wish to copy/move, then simply enable automation-locking, and copy/move the clip as normal. When you're done, you can disable automation-lock mode, and delete the clip. Obviously, if you only want to copy or move nodes on one single curve, one of Tracktion's other automation editing tools will be a better choice.

Recording Automation Changes Live

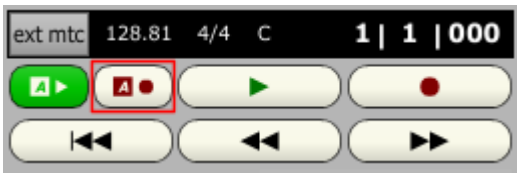


Figure 7.3.14

When the **automation record** button is enabled (Fig. 7.3.14), any changes made to an automatable parameter during playback will be recorded. It is important to understand that this applies to all parameters, not just those that have visible, or previously created, automation curves. For this reason, the **automation write** button should always be left in the "off" state unless you are actively recording live automation changes.

When recording automation curves, there are two punch-out options available. Both can be accessed from the **automation** button's pop-up menu (Fig. 7.3.14):

Punch out: When this option is selected, the recorded changes are inserted into any existing automation curve.
Keyboard shortcut: U.

Punch out (to end): When this option is chosen, any automation points beyond the punch-out point are cleared.
Keyboard shortcut: CTRL + **U**.

If you stop playback while in automation record mode, the recording will be ended as if you had selected the punch out option.

You can record changes by adjusting controls on the filter's interface, or by using an external control surface, but the method we shall look at here is that of using MIDI controls such as modulation wheels to control automation.

Using control surfaces with Tracktion is discussed in Section Four of this chapter, but the premise is basically the same as what follows below.

Controller mappings allow you to assign any knobs, sliders, or control wheels your control keyboard may offer to various parameters in your edit. For example, you could assign the modulation wheel on your control keyboard to the cutoff control of a synthesiser plug-in for instant dance-floor appeal.

In many ways creating MIDI controller mappings shares much with creating custom control surfaces, but the end results are often quite different. Custom control surfaces can control both filter parameters, and transport control options. In addition, custom control mappings are not tied to specific filters or tracks in a specific edit. However, with custom controllers, you often have little control over which parameters of a filter will be available to the surface. MIDI controller mapping creates a link between a controller, and a specific parameter. You can therefore easily control parameters spread across a number of filters.

It is possible for one MIDI device to mix and match MIDI controller mappings and a custom control surface setup however, so if your controller offers a high number of sliders or rotary controls, you may want to consider setting aside some or all of the controllers to act as a control surface. If you only have a few performance controls available however, the easy accessibility of the MIDI controller mapping panel makes it by far the more flexible choice.

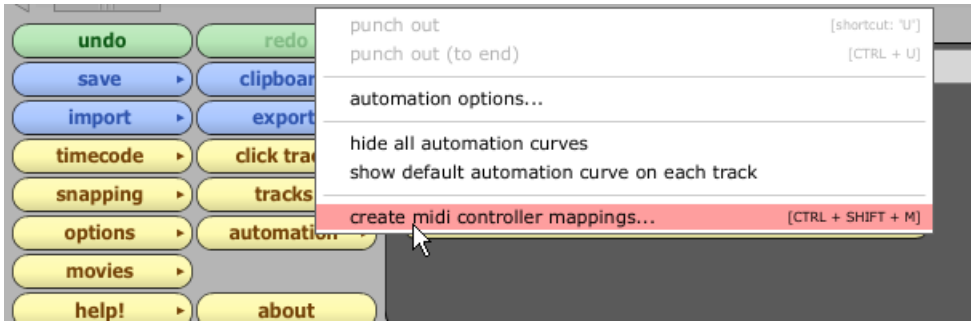


Figure 7.3.15

The controller mapping screen can be accessed by clicking the **automation** button in the **control section** (Fig. 7.3.15) and selecting the **create MIDI controller mappings** option, or using the keyboard shortcut: **CTRL** + **SHIFT** + **M** (**CMD** + **SHIFT** + **M** for Mac users).

When this option is selected, a window will appear in which you can select MIDI controllers and assign them to automatable parameters in your edit (Fig. 7.3.16).

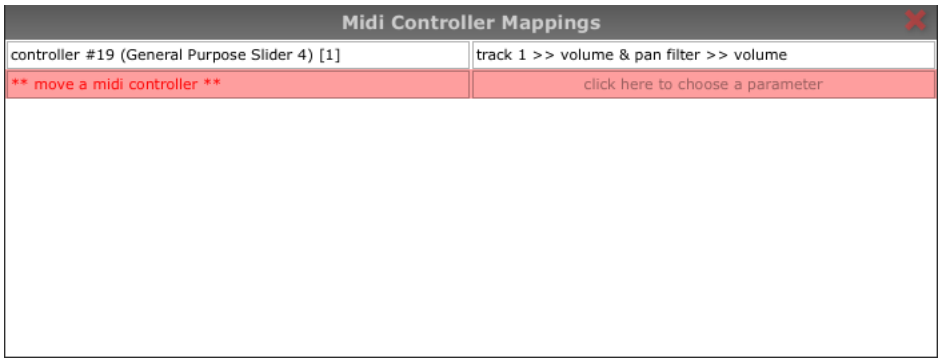

Midi Controller Mappings
controller #19 (General Purpose Slider 4) [1]
track 1 >> volume & pan filter >> volume
** move a midi controller **
click here to choose a parameter

Figure 7.3.16

The mapping editor is made up of two columns. The left-hand column shows mapped MIDI controllers, and the right-hand column shows the automation parameter currently mapped to the controller.

To create a new map, click the box labelled “click here to choose controller” in the controller column. You will be prompted to move the controller you wish to map; simply adjust a controller on your MIDI controller, and Tracktion will detect it. Once the control is chosen, Tracktion will create a new entry in the list. Now you can click the parameter box and choose a parameter from the pop-up menu.

You can delete assignments by selecting the corresponding row and pressing the **DELETE** key. You can also change the MIDI controller, or parameter for a given entry by clicking on the relevant table element, and following the same steps as you did to create it..

Once you have updated your mappings you can close this window.

If your controller does not seem to be controlling the parameters you selected, select the MIDI input device that the controller is connected to, and ensure that the **allow MIDI controller remapping** option is enabled.

Note that you do not need to have **automation write** mode enabled to use controller mapping, only to record your real-time performances.

The Automation Button Options

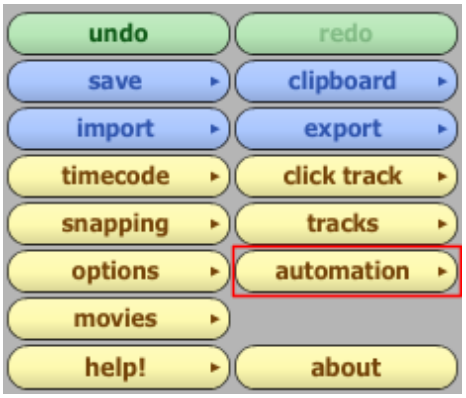


Figure 7.3.17

When the automation button is clicked (Fig. 7.3.17), a pop-up menu with the following options is shown:

Punch out: When this option is selected, the recorded changes are simply inserted into any existing automation curve.
Keyboard shortcut: U.

Punch out (to end): When this option is chosen, any automation points beyond the punch-out point are cleared when recording stops.
Keyboard shortcut: CTRL + **U**.

Automation options: When this option is selected, a window will be shown with the following options:

- **Glide:** Tracktion can optionally fade recorded automation curves into existing curves. This control sets the period over which the fade will occur. No fade will be applied if the value of this control is set to zero. This can be very handy when recording an automation event into an existing curve, for example, if you trying to gently back off the level of an instrument for just a few bars to let other elements in the mix stand out, you can simply record the automation event into the existing curve. When this option is enabled, it doesn't matter if there is a slight mismatch in level between the end of your edit and the existing curve, as Tracktion will simply create a transition between them. If this option was disabled, you could potentially hear a slight click as the level changes abruptly.
- **Simplify newly recorded automation:** Recorded automation may contain many points that are either redundant or likely to be the result of finger twitches, and these points generally be can be safely removed. When this option is active, the recorded automation curve will be automatically stripped of these kinds of unnecessary points. If this option is disabled, the recording will not be altered.
- **Shift automation to compensate for delays:** When this option is active, automation points will be adjusted to take into account delays caused by latency. Typically you will always want to leave this option enabled.

Hide all automation curves: This will hide all automation curves. It is simply a shortcut for manually hiding them.

Show default automation curve on each track: This will display the level parameter of the last vol / pan on each track.

Create MIDI controller mappings: This option shows the MIDI controller mapping window. Setting controller mappings is described in the previous sub-section.
Keyboard shortcut: CTRL + **SHIFT** + **M** (**CMD** + **SHIFT** + **M** for Mac users).

7.4 : Using Control Surfaces

Installing And Configuring A Control Surface

Control surfaces provide a great way to add tactile control to Tracktion. Typically control surfaces come in two flavours: the most powerful, but also typically more expensive option, is the dedicated control surface; the second option is a MIDI fader or rotary control bank. Generally speaking, dedicated control surfaces will be designed to mimic the look and behaviour of a mixing console, complete with transport control functions, and other functions for controlling a sequencer directly from the device's surface. They also offer powerful bi-directional communication, allowing changes inside Tracktion to be reflected on the control surface's interface (motorized faders for example). They are usually designed to require minimal, if any, configuration to connect to a sequencer such as Tracktion. As long as the host software supports the control surface model, or the device is capable of emulating a model that is supported, installation is typically just a case of specifying the MIDI ports to which the device is attached. By contrast, MIDI control banks are usually much more multi-purpose in their layout, and typically take some degree of configuration to use as control surface style device. Often they are better suited to being used as lightweight controllers for individual plug-ins, rather than as mix surface substitutes, but with Tracktion you can choose either approach. If you would like to learn about using a MIDI controller as a plug-in controller, you may want to read Section Three of this chapter.

An example of a dedicated control surface is the Mackie Control Universal. The Control Universal makes a great partner to Tracktion, and is extremely easy to install and use. Using the MCU with Tracktion is described later in this section.

There are many examples of simple MIDI controllers. Some controllers sport a simple bank of rotary controls, others offer various types of input control, and some devices such as the Novation ReMOTE family of controllers combine a keyboard, rotary controls, sliders, and touch pads all on one device.

Just to muddy the waters a little, some controllers would seem to fit the physical description of a MIDI controller, but offer the primary advantages of a dedicated control surface in that they need no configuration, and typically interface tightly with the host software. Mackie's Control C4 device is an example of this kind of device. The C4 is also discussed later in this section.

To install a control surface, or a MIDI controller that will be used as one, in Tracktion:

- Ensure the device is physically connected to Tracktion with suitable MIDI cables, or USB leads. Be aware that many devices require a MIDI input and output all to themselves, so only use MIDI pass-thru if you are sure your controller supports it:
- Turn the device on.
- Open Tracktion.
- Switch to the settings page.
- Select the control surfaces group (Fig. 7.4.1).

Figure 7.4.1

- If your device is shown in the list of currently supported devices, select the corresponding list entry.
- If your device is not shown in the list, first consult the documentation for your hardware, and look to see if it can emulate any of the supported devices. If it can, enable the emulation mode, and select the appropriate list entry. If not, you will want to skip to the next part of this section, where we discuss creating custom control surfaces.
- With your device selected, select the MIDI input and output devices that the controller is attached to in the properties panel (Fig. 7.4.2).

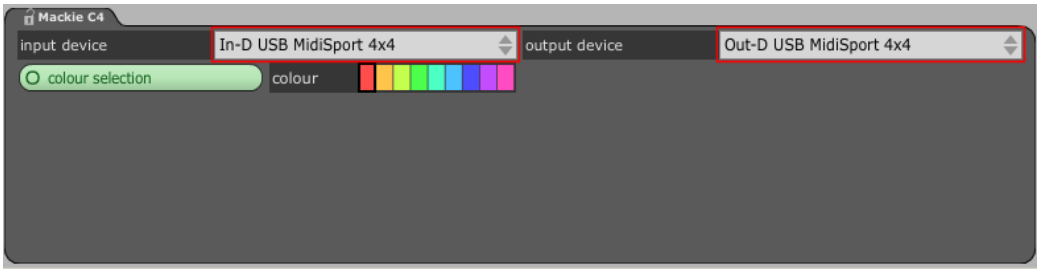


Figure 7.4.2

At this point, your device is ready to go. All that remains to do is to decide whether you want to enable the colour selection mode for this controller. When enabled, the colour selection mode causes the tracks, or filters that the controller is currently focussed on to be highlighted. The highlight colour is specified by the selected entry in the palette to the right of the colour selection button. Colour selection is extremely useful in that it allows you to see at a glance where your controller's focus currently lays. If, however, you seldom need to move the focus of your controller(s), then you may find that colour selection unnecessary.

Figure 7.4.3 shows an example of the edit page when an eight track mixing surface such as the Mackie Control Universal is used with colour selection enabled. In this image, tracks nine through 16 are under control by the Mackie Control Universal.

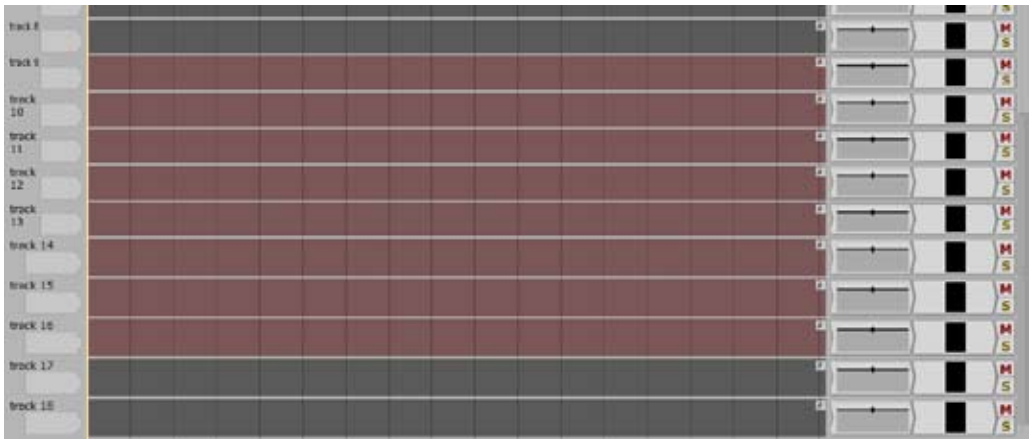


Figure 7.4.3

Creating A Custom Control Surface

Tracktion can map MIDI CC information to various mix parameters, options, and navigation controls. To create a new custom control surface:

- Ensure the device is physically connected to Tracktion with suitable MIDI cables, or USB leads. Be aware that many devices require a MIDI input and output all to themselves, so only use MIDI pass-thru if you are sure your controller supports it:
- Turn the device on.
- Open Tracktion.
- Switch to the settings page.
- Select the control surfaces group.
- Click the **add custom control surface...** button.
- You will be prompted for a name for the custom surface. You can create a number of different surfaces for different purposes, so be descriptive.
- Select the MIDI input device(s) to which your controller is attached (Fig. 7.4.4).

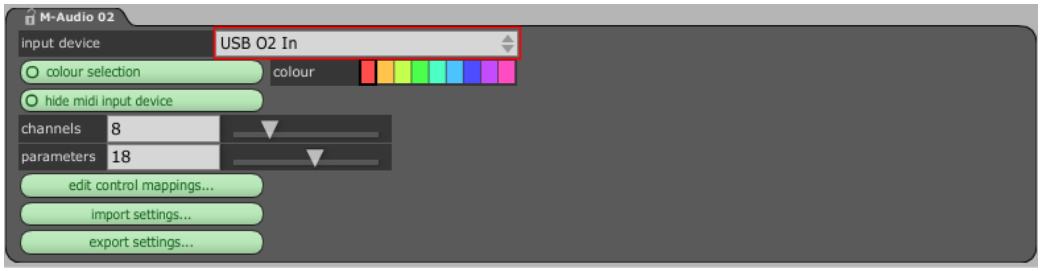


Figure 7.4.4

Hide MIDI input device: For dedicated control surfaces, there is no reason to have the input device be available to the edit page. If your custom controller is purely a control surface device, and there are no other MIDI devices sharing the input with the surface, then you can use this option to hide the input from the available input list. If you controller is part of a controller keyboard, then you might still wish to be able to record MIDI notes, and as such you would want to leave this option unchecked.

Channels: This option specifies how many tracks your device is capable of mixing at one time, and is used to define how many tracks will be highlighted if the **colour selection** option is enabled.

If you are not using your controller as a mixer device, i.e., you are using it only to control the transport functions, or VST plug-ins, then you may want to set this value to zero.

Parameters: This option specifies how many plug-in parameters can be manipulated at one time on your controller. If you have eight unused rotary controls on your device, for example, you could set this value to eight.

Edit control mappings: This option displays a control mapping screen, where you can link the sliders, buttons, and rotary controls on your device, to functions within Tracktion. The mapping screen is described on the next page.

Import/Export settings: You can import and export custom controller configurations, either to share with others, or to copies for safe keeping when doing backups.

Figure 7.4.5 shows the controller mappings window. The mapping editor is made up of two columns. The left-hand column shows mapped MIDI controllers, and the right-hand column shows the function currently mapped to the controller.

To create a new mapping, click in the controller column, in the box labelled “click here to choose controller.” You will be prompted to move the controller you wish to map. Adjust the controller and Tracktion will detect it. Once the controller is chosen, Tracktion will create a new entry in the list. Now you can click the parameter box and choose a parameter from the pop-up menu.

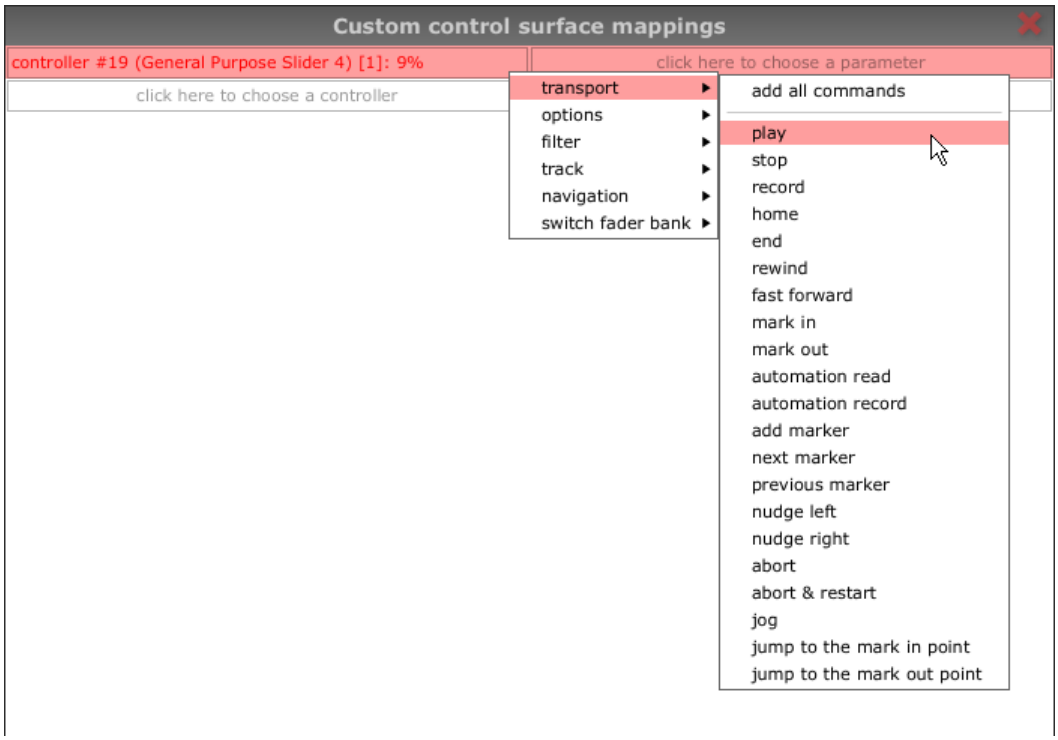


Figure 7.4.5

The parameter options are organized by group:

Transport: These parameters allow you to assign transport functions to knobs, faders, or ideally push buttons on your controller's surface. In this way you have easy access to playback start, stop, and record, for example, from your mixing surface or control keyboard. Typically push buttons on a controller are mapped to note on and off commands, though in some cases they may send MIDI CC events.

Options: These parameters allow you to control a number of handy toggle options such as loop mode, the click track, and MIDI timecode chasing. Again, because they are toggle buttons, they are ideally suited to be being paired with push buttons on your control surface, but they can be used with regular rotary controls or faders. Typically push buttons on a controller are mapped to note on and off commands, though in some cases they may send MIDI CC events.

Filter: You can assign a fader or knob to controls such as master volume/pan, or the quick control parameter of the currently focussed filter. In addition you can have your controls assigned to various filter parameters. What these parameters will be depends on the filter in question, so typically assigning a bank of four or more controls to consecutive filter parameter numbers is the best bet. For example, if you have six spare controllers, assign them to filter parameters one through six. In addition, you should set the **parameters** field in the properties panel to six. You can now assign another control or push button pair to one of the **switch fader bank** page up/down options.

Track: You can assign controls you various standard track parameters, such as volume, pan, aux send level, arm status, or mute/solo state. As with filter parameters, it is best to assign these options in banks, to create a more mixer like feel, and to allow for easy navigation through focussed tracks. For example, if your controller offers eight fader strips, you may want to assign them to level for tracks one through eight. They can then be paged up and down through your track list by use of a control assigned to page up / down. However many tracks you assign here, be sure to set a matching value in the channels field in the properties panel.

Navigation: The navigation parameters allow you to control standard navigation options from your controller. For example, you could use a rotary control, or push button pair, to zoom into or out of your edit.

Switch fader bank: These parameters allow you to switch the tracks or filter parameters that your controller is currently targeting. Typically an edit will have more tracks than your controller has faders, and plug-ins are also likely offer more parameters than you have rotary controls; to allow you to address the full range of tracks of parameters, the focussed range can be paged forwards or backwards. By selecting a suitable jump range, you can have your controller move through your edit one track at a time, or in banks of eight tracks, for example.

Figure 7.4.6 is an example of a custom control surface mapping for a four-channel control surface. The play button is selected and ready for mapping.

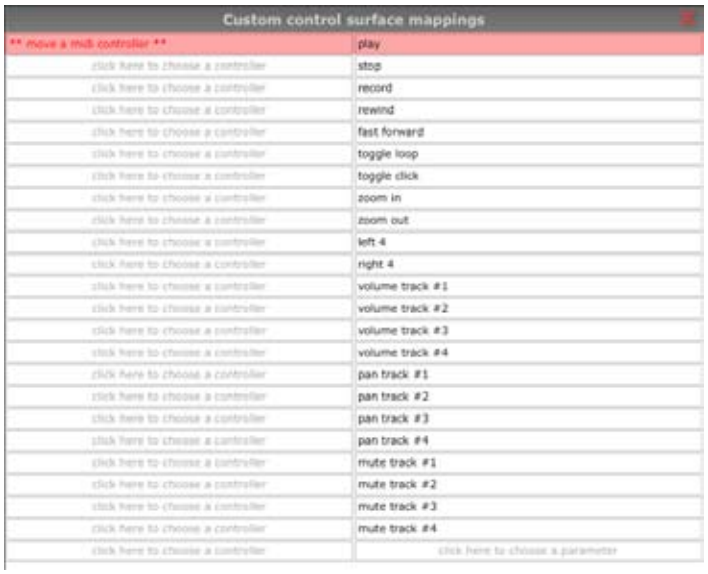

Custom control surface mappings
** move a midi controller **
play
click here to choose a controller
stop
click here to choose a controller
record
click here to choose a controller
rewind
click here to choose a controller
fast forward
click here to choose a controller
toggle loop
click here to choose a controller
toggle click
click here to choose a controller
zoom in
click here to choose a controller
zoom out
click here to choose a controller
left 4
click here to choose a controller
right 4
click here to choose a controller
volume track #1
click here to choose a controller
volume track #2
click here to choose a controller
volume track #3
click here to choose a controller
volume track #4
click here to choose a controller
pan track #1
click here to choose a controller
pan track #2
click here to choose a controller
pan track #3
click here to choose a controller
pan track #4
click here to choose a controller
mute track #1
click here to choose a controller
mute track #2
click here to choose a controller
mute track #3
click here to choose a controller
mute track #4
click here to choose a controller
click here to choose a parameter

Figure 7.4.6

Using The Mackie Control Universal

The MCU offers eight mixer strips. Each mixer strip contains a motorised fader, which can be used to control the volume of a volume/pan filter (Fig. 7.4.7). In addition, each strip contains a pan control, and options to control the mute/solo and input arm state for the track. MCU devices can be further extended by adding up to three XT extender devices. Each XT adds a further eight tactile mixing channels to your Tracktion experience.

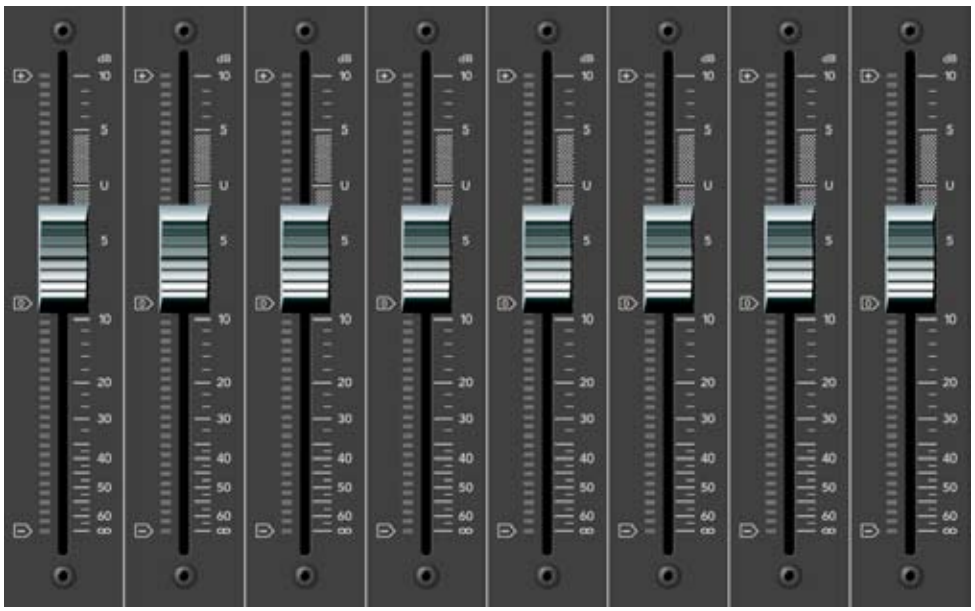


Figure 7.4.7

To the right of the MCU's mixer strips is a master fader, which controls the master volume level in Tracktion.

Figure 7.4.8

Above the track faders, there are a range of buttons, and a row of V-pots (Fig. 7.4.8):

Rec/Rdy: Use this button to toggle whether the input device for this track is armed. This button will only operate if an input device is assigned to the track.

Note: You can quickly arm or unarm all tracks by holding down the MCU's shift button, and simultaneously pressing the record button.

Signal: The MCU's green signal LED will illuminate in time with a channel's audio level, in order to show that audio is present on that channel. The light will illuminate solidly when the channel's signal is at 15 dBFS.

Solo: Toggles the track's solo state.

Mute: Toggles the track's mute state.

Select: When the MCU is in plug-in mode, the select button selects the track ready for plug-in editing.

A scribble strip at the top of the unit displays information related to the current track, or V-pot. The information displayed on the scribble strip depends on the mode that the MCU is in. The four modes are: pan, aux, plug-in, and marker (Fig. 7.4.9). These modes are available by selecting the corresponding button in the assignment group. They are described below:

Figure 7.4.9

Pan mode: When the MCU is in pan mode, the V-pots control panning for the eight current tracks. The pan position is shown by an LED in the V-pot's collar. Pressing the V-pot causes the pan to reset to centre. The scribble strip shows the track name for each track on the top row of the LCD, to make track identification easy. A level meter is also shown on the bottom row of the LCD for each track.

Aux Mode: When the MCU is in aux mode, the V-pots are assigned to the auxiliary send filter's send amount. The page left and right buttons select which auxiliary bus is currently active. The scribble strip shows the track name, along with the currently selected aux send.

Plug-in Mode: When the MCU is in plug-in mode, the V-pots are assigned to the parameters of the currently selected filter. The cursor and zoom buttons can be used to move between the filters in your edit. The scribble strip shows the current parameter, and the current level for each of the V-pots. The page left and right buttons can be used to scroll through the filter's parameters, if there are more than eight.

Markers Mode: When the MCU is in markers mode, the V-pots act as push buttons that can be used to quickly jump between markers in your edit. The marker names are shown on the scribble strip for easy identification. The **page left** and **page right** buttons allow you to page backwards and forwards through the markers eight at a time.

The fader banks buttons can be used to scroll the MCU through Tracktion's tracks. The bank left/right buttons move eight tracks at a time, whereas the channel left/right buttons scroll just one track at a time.

Flip: The flip button transposes the faders and V-pots, such that the V-pots act as volume controls, and the faders are assigned to whatever task the V-pots were previously serving. You can use the flip option in all of the MCU's modes, so the faders can be used to control filter parameters or aux send levels, for example.

The large scrub wheel at the lower right-hand corner of the MCU is used to scroll the play-head cursor through the edit. It is equivalent to using the **LEFT** and **RIGHT CURSOR** keys on your keyboard.

To the left of the wheel there are four arrow buttons, and a zoom button. The up and down arrow buttons scroll vertically through the on-screen track list. The left and right buttons scroll the edit horizontally. These two buttons are equivalent to dragging the scroll bars located below the tracks, and to the right of the filter section.

When the zoom button is pressed, it toggles the arrow buttons to zoom mode, allowing you to zoom in and out of your edit both horizontally with the left and right arrows, and vertically with the up and down arrows.

Edit: This button puts the four cursor keys into “edit” mode, where they perform the following functions, depending on the currently highlighted screen component:

If a track is selected, the up/down buttons move the selection focus up and down through the track list.

If a filter is selected, the left/right buttons move the selection focus left and right through the current track’s filter list. The up/down buttons move the selection focus to the filters in the track above or below the current track.

If a clip is selected, the left/right buttons move the selection focus left and right through the clips on the current track. The up/down buttons move the selection focus to the clip in the track above, or below, the current clip.

Above these controls you will find a number of shortcut controls for the transport section options (Fig. 7.4.10).

Figure 7.4.10

Rewind: This button behaves the same as the **rewind** button in Tracktion’s transport section. Tapping it twice in quick succession though is equivalent to pressing Tracktion’s **return-to-zero** button.

Fast-forward: This button behaves the same as the fast-forward button in Tracktion’s transport section.

Play: This button behaves the same as the play button in Tracktion’s transport section.

Stop: Click this button once to stop playback. Clicking it when play-back is stopped returns the play-head cursor to the start of the edit. Unlike the **return-to-zero** button, this will jump straight to the start of the edit. RTZ on the other hand will jump to the start of a selected clip if one lays between the current play-head cursor position and the start of the edit.

Record: This button when held down with the play button activates Tracktion’s record mode.

Loop, Punch, Click, Snap, End to End, and Scroll: These buttons toggle their respective modes. Clicking these buttons is equivalent to clicking their on-screen counterparts.

Slave: This button toggles MIDI timecode chasing. Clicking this button is equivalent to clicking the MTC icon in Tracktion’s transport section.

Above the transport section, there is a bank of buttons that allow you to conveniently perform a range of tasks from the MCU's surface (Fig. 7.4.11 and 7.4.12).

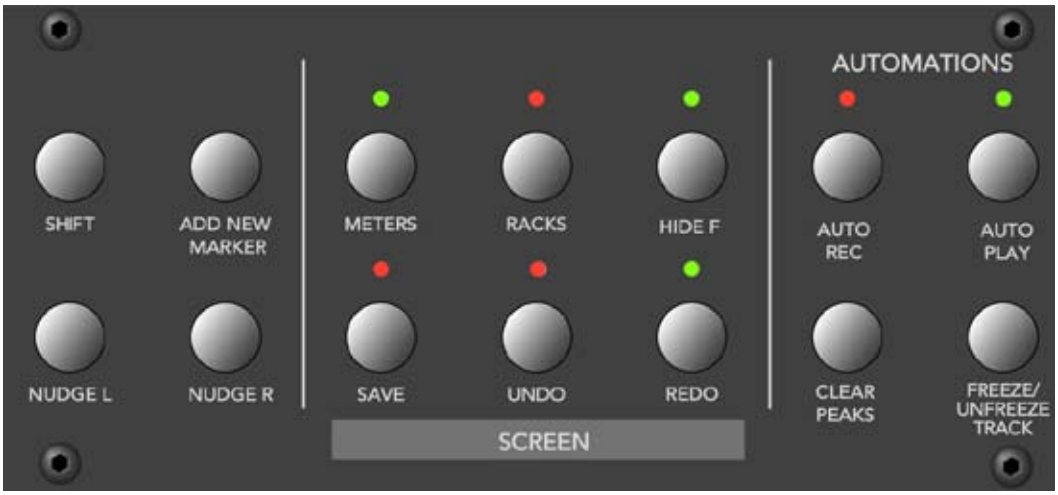


Figure 7.4.11

Add new marker: Click this to add a marker at the current play-head cursor position.

Nudge L/R: These buttons nudge the selected clip(s) or note(s) to previous/next snap point. This is equivalent to the **CTRL** + **LEFT** / **RIGHT** (**CMD** + **LEFT** / **RIGHT** for Mac users) keyboard shortcut.

Show meters: Use this button to enable / disable the big meter view.

Show racks: Use this button to show / hide the rack editor.

Show filters: Use this button to show / hide the filter section.

Auto rec: This button toggles the automation write mode. Clicking this button is equivalent to clicking the red "A" button in Tracktion's transport section.

Auto play: This button toggles the automation read mode. Clicking this button is equivalent to clicking the green "A" button in Tracktion's transport section.

Save: This button simply causes Tracktion to save the edit.

Undo/Redo: Shortcut for the undo / redo operations.

Clear peaks: Use this button to quickly reset all clipped meters.

Freeze/unfreeze track: Use this button to freeze or unfreeze the current track.

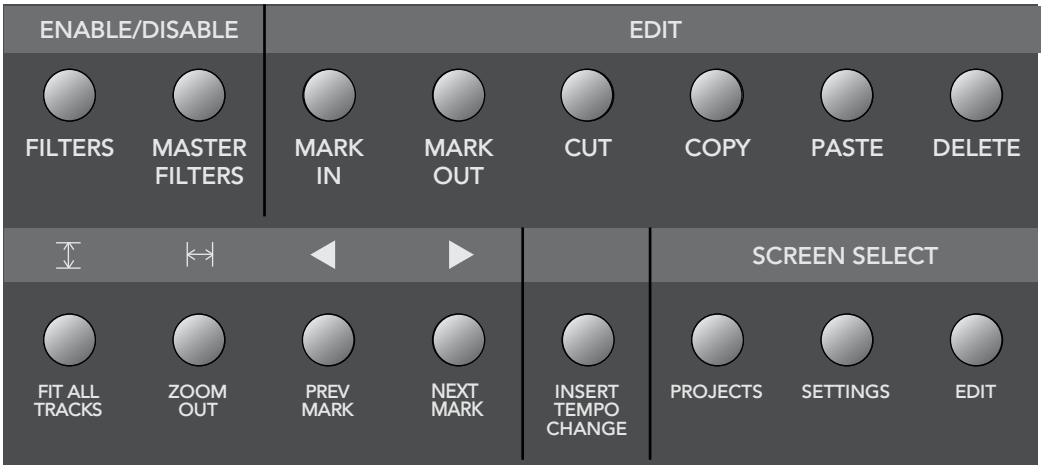


Figure 7.4.12

Enable/disable filters: Pressing this button toggles the enable/disable state for all of the filters on the selected track.

Master filters: Pressing this button toggles the enable/disable state for all master filters.

Mark in: Click this button to set the loop-start marker to the current play-head cursor location.

Mark out: Click this button to set the loop-end marker to the current play-head cursor location.

Cut / Copy / Paste / Delete: These buttons perform the standard clipboard operations.

Fit all tracks: Click this button to vertically resize all tracks such that they are all visible on screen.

Zoom out: Click this button to horizontally zoom the edit out such that the entire edit is visible.

Prev mark: Click this button to jump the play-head cursor to the previous marker point.

Next mark: Click this button to jump the play-head cursor to the next marker point.

Insert tempo change: Click this button to insert a tempo change at the current play-head cursor position.

Projects: Click this button to switch to the projects page.

Settings: Click this button to switch to the settings page.

Edit: Click this button to switch to the edit page.

The MCU features a large time display (Fig. 7.4.13) that shows the location of the play-head cursor in the edit. Clicking the SMPTE/BEATS button located just below the time display toggles the display between SMPTE and beats/bars.

To the left of the SMPTE/BEATS button is a CPU button. When this button in depressed, the MCU shows information about resource usage on your MCU display.

Figure 7.4.13

The assignment field shows the currently selected assignment mode for easy reference.

The rude solo LED, located to the right of the time-display, illuminates when a track is in solo mode.

Using The Mackie C4

The Mackie C4 has 32 continuous rotary controllers, or V-pots, arranged as four rows of eight, and a section of mode and utility buttons. A single row of the C4's four available V-pot rows is shown in Figure 7.4.14. Each V-pot has an illuminating collar that shows the current rotary position of the V-pot, or the state of a toggle button.

Figure 7.4.14

Four mode controls switch the C4 between plug-in mode, mix mode, aux mode, and edit mode. The mode and utility buttons are shown in Figure 7.4.15.

Figure 7.4.15

Working through the button groups from left to right, there are:

Split: This button is currently reserved for future updates.

Function:

- **Lock:** This button keeps the C4 focused on the current filter even if you select another filter within Tracktion. This allows you to keep the C4 armed for working with a specific plug-in, even when performing other operations with the mouse and keyboard.
- **Bypass:** This button toggles the enabled/disabled state of the selected filter. This is useful for quickly comparing the original and effected version of a sound.

Mode:

- **Plug-in:** Select this button to switch the C4 to plug-in mode. When in plug-in mode, selecting a filter in Tracktion will present you with a full control surface for that filter. The track name and filter name are displayed on the C4's scribble pad, and each of the filter's parameters are assigned to a V-pot. If there are more than 32 parameters, you can scroll through them using the page controls.

  You can also select a filter for editing by selecting a track and then selecting a plug-in from the C4 itself.
- **Mix:** Selecting the mix mode provides volume and pan controls for twelve tracks at a time. Each track is represented as a pair of V-pots, one for volume and one for pan. In addition, the track's name, and a level meter is shown on the scribble pad. The page controls allow you to move through your track list.

- **Aux:** The aux mode shows the eight auxiliary send buses along the top row of V-pots. Pressing a V-pot will select the associated send, and the remaining three rows of V-pots show the send level for 24 tracks at a time. Adjusting any of these V-pots adjusts the send level for the corresponding track. If the send is a stereo send, then pressing the V-pot switches it to pan mode.
- **Edit:** The edit mode assigns typical editing functions to each of the 32 V-pots, allowing you to perform operations such as cut and paste from the C4. In addition, the transport options: play, cursor forwards/backwards, record, return to zero, and mode button such as loop, punch, and click, are assigned. Each V-pot's function is clearly labelled on the scribble pad, and performing the function is as simple as pushing the V-pot. The edit operations are describing later in this section.

Actions:

- **Back:** The back button takes you up one level in the C4's interface hierarchy. If you have a filter selected, for instance, the back button would move you back to seeing the list of filters on the current track.
- **Solo:** The solo button enables/disables solo for the current track. This allows you to clearly hear the effect of the filter. This button only has any effect if you are in plug-in mode and have a plug-in selected.

Presets: The increment and decrement preset buttons allow you to move up and down through the selected filter's pre-sets.

Page:

- **Bank left/right:** The bank buttons page the C4 though the available tracks, or filter parameters in blocks of eight at a time, effectively scrolling the options up or down a line.
- **Single left/right:** The single buttons scroll the C4 though the available tracks, or filter parameters one at a time.

The functions available when the C4 is in edit mode are as follows (the four rows of V-pots are broken into four function groups: views, modes, editing, and transport):

The "view" options:

1. Projects : Switch to the projects page.
2. Settings : Switch to the settings page.
3. Edit : Switch to the edit page.
4. Fit tracks : Fit all tracks on screen. This option is equivalent to pressing the F8 key.
5. Fit edit : Fit entire edit on screen. This option is equivalent to pressing the F5 key.
6. Big meters : Toggles the big meter view.
7. Show input : Use this button to display or hide the input section.
8. Show filters : Use this button to display or hide the filter section.

The "modes" options:

1. Loop : Toggle loop mode.
2. Punch : Toggle punch mode.
3. Click : Toggle click-track.
4. Snap : Toggle snap-to-grid.
5. E-to-E : Toggle end to end mode.
6. Scroll : Toggle scroll mode.
7. Chase : Toggle timecode chasing.
8. TC mode : Toggle the time-line display between SMPTE and and beats/bars.

The “editing” options:

1. Cut : Perform a standard clipboard cut operation.
2. Copy : Perform a standard clipboard copy operation.
3. Paste : Perform a standard clipboard paste operation.
4. Delete : Perform a standard clipboard delete operation.
5. Mark in : Set the loop-start marker to the current play-head cursor position.
6. Mark out : Set the loop-end marker to the current play-head cursor position.

The “transport” options:

1. Return to zero : Return the play-head cursor to the start of the edit.
2. Stop : Stop playback mode.
3. Play : Start playback mode.
4. Record : Start recording.
5. Rewind : Move the play-head cursor back through the edit. Press stop to stop scrolling.
6. Fast Forward : Move the play-head cursor forwards through the edit. Press stop to stop scrolling.
7. Automation Play : Toggle the automation read mode.
8. Automation Record : Toggle the automation record mode.

Using the Remote SL

Tracktion also directly supports Automapping with the Novation ReMote SL. This innovative product has dual screens with a row of faders, knobs, and endless encoders making it a powerful control surface, while at the same time also remaining a capable midi controller with keyboard, joystick, XY pad, and drum pads.

Figure 7.4.16 illustrates the controls referenced in the sections below:

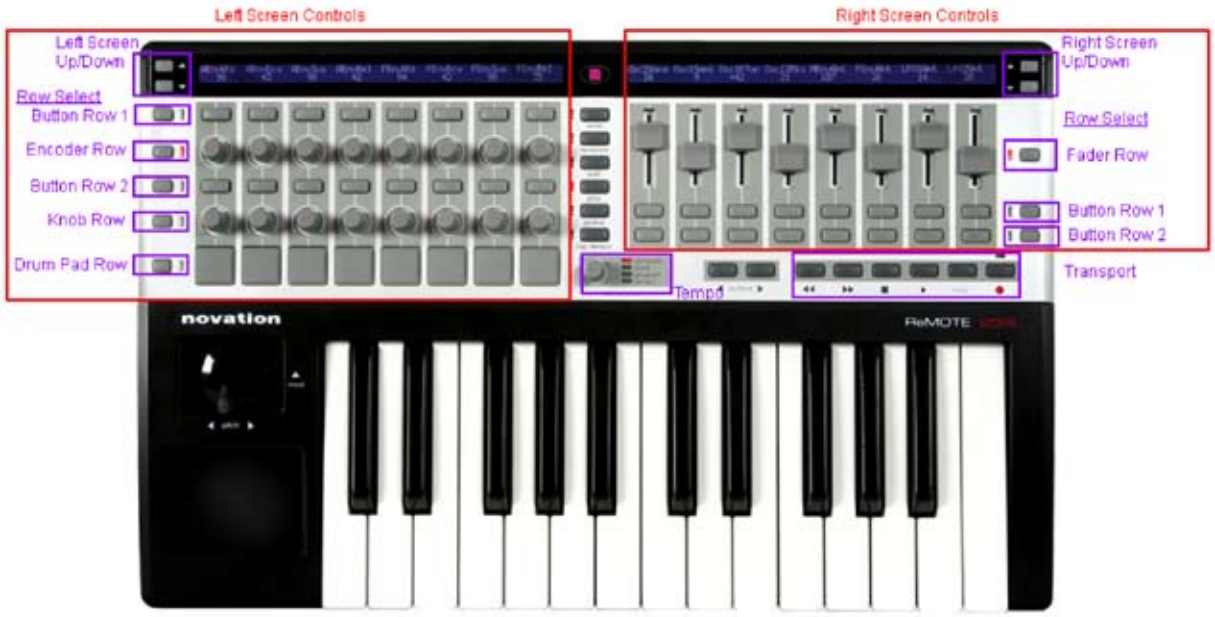


Figure 7.4.16

Transport: The Transport behaves as indicated by the button labels.

- **Rewind:** This button rewinds the Tracktion transport. Each press will mirror a single click on the onscreen Rewind button.
- **Fast Forward:** This button fast forwards the Tracktion transport. Each press will mirror a single click on the onscreen Fast Forward button.
- **Stop:** This button stops playback of the Tracktion transport. Pressing it during playback will stop playback. Pressing it while stopped will return the Transport to Zero, mirroring the function of the Tracktion RTZ button.
- **Play:** This button begins playback of the Tracktion transport. Pressing it while stopped will begin playback. Pressing it during playback will have no effect.
- **Loop:** This button engages/disengages the Loop setting for the Tracktion transport. Each press will toggle this setting.
- **Record:** This button begins recording of the Tracktion transport. Pressing it while stopped will begin recording. Pressing it during playback or recording will have no effect.

Right Screen Controls: The right side permanently controls channel levels, mutes, and solos for eight channels at a time. The right screen up/down arrows will cycle through the channels, eight at a time. Tracktion will display colored backgrounds to indicate the eight channels under control.

- **Faders Row:** The faders control channel levels. Moving a fader, or selecting the fader row will light the fader row button LED. The right screen will show channel names on the top row and the fader value in dB in the bottom row.

  Pressing the **fader row select** button a second time after it is already lit displays the Pan value for the associated channels on the screen and allows the fader to control panning. Each subsequent press of the fader row select button will switch between fader and pan control/display.
- **Button Row 1:** The top button row controls channel mutes. Pressing a button or selecting the button row 1 lights the button row 1 LED. The right screen will show channel names on the top row and the mute status (blank for unmated, “muted” for muted).
- **Button Row 2:** The bottom button row controls channel solos. Pressing a button or selecting the button row 2 lights the button row 2 LED. The right screen will show channel names on the top row and the solo status (blank for unsoloed, “soloed” for soloed).

Left Screen Controls: The left screen controls plug-in parameters. You can select plug-ins for editing as described below, or you can select a plug-in onscreen by clicking on it. The ReMOTE SL left side will change to display the newly selected plug-in.

The screens initially show you the names of the tracks, eight at a time. If more than eight tracks are present in the edit, pressing the left screen up/down arrows cycles through all the tracks, eight at a time. Pressing a button under a channel name in Button Row 1 selects that channel for plug-in editing.

The left screen will now change to display all plug-ins for the selected channel. If more then eight plug-ins are present on the track, pressing the left screen up/down arrows cycles through all the plug-ins on the track, eight at a time. Pressing a button under a plug-in name in Button Row 1 selects that plug-in for editing. Pressing the Drum Pad Row select button navigates back one level, first to the plug-in list, and then to the track list.

After selecting a plug-in, eight plug-in parameters are displayed on the screen for editing. The plug-in parameter name is displayed on the top row and the plug-in parameter value is displayed on the bottom row. 16 of the plug-in parameters can be controlled at once: the first eight on the encoders and the second eight on the knobs. You can shift the parameters under control eight at a time using the left screen up/down buttons. Pressing the left screen up button will shift the second eight parameters up onto the controls, and the third eight parameters onto the knobs.

Note that the first row of eight plug-in parameters is special: the first slot is the Track Name, the second slot is the plug-in name, the third through fifth slots are blank followed by the seventh slot showing the Tracktion Dry Level (if present for the plug-in), and the eighth slot the Tracktion Wet Level (if present for the plug-in). This is necessary to make sure the ReMOTE specific *.vstxml parameters start in the correct position at slot one.

After the first row, the parameters are organized in one of two ways. If a valid *.vstxml file is present for the plug-in under control, the parameters will be displayed in the order presented in the *.vstxml file. If there is no *.vstxml file present, then the parameters will be displayed in parameter order. In addition, all parameters should obey the naming described in the *.vstxml file using the shortName attribute for six characters. VST parameter structure and *.vstxml files are discussed in the Novation ReMOTE SL documentation and in the VST 2.4 SDK found at http://www.steinberg.net.

- **Button Row 1:** As described above, use button row 1 to select tracks and plug-ins for editing. Once a plug-in is selected, it will lock the plug-in under control so it will not follow the selected plug-in in Tracktion. The associated button row 1 select button LED will light when a plug-in is locked.

- **Encoder Row:** The encoder row is used to control eight of the plug-in parameters at time. The encoder row select button will change the display to show the names of the parameters on the top row and the values of the parameters on the bottom row. Turning an encoder will also automatically select the encoder row for viewing on the screen. Use the left screen up/down buttons as described above to select the parameters under control by the encoder row.
- **Button Row 2:** Neither the button row 2 nor the button row 2 select buttons are currently implemented.
- **Knob Row:** The knob row is used to control eight of the plug-in parameters at time. The **knob row select** button will change the display to show the names of the parameters on the top row and the values of the parameters on the bottom row. Turning a knob will also automatically select the knob row for viewing on the screen. Use the left screen up/down buttons as described above to select the parameters under control by the knob row.
- **Drum Pad Row:** As described above, pressing the **Drum Pad Row select** button navigates back one level. From the plug-in parameters it will go back to the plug-in list. From the plug-in list it will go back to the track list.

  The Drum pad buttons simply send midi note data to the MIDI out port 1 and are not part of the automap.

Tempo Adjust: You can adjust Tracktion's tempo for the current section of the edit. Pressing tap tempo once opens the tempo change for the current cursor position. Tapping it will then set the tempo. The Tempo LED will always flash at the current tempo. This is accomplished by Tracktion sending midi clock to the ReMOTE SL. Note that for this to happen, the ReMOTE SL must be configured to receive MIDI clock. This is done on the ReMOTE SL by setting MidiClk on page two of the globals menu to EXT-AUTO.

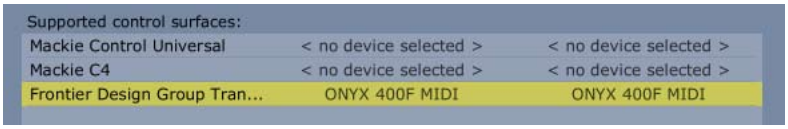
Alternately, you can set the tempo for the current position by turning the data encoder with tempo selected. This will open the tempo change for the current cursor position and directly edit the tempo.

Using the Frontier Design Group Tranzport

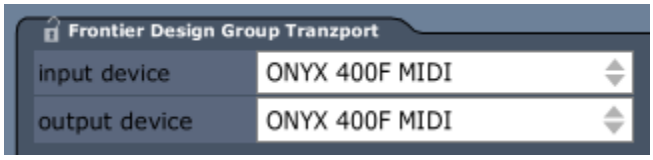
Tracktion can be controlled with the Frontier Design Group Tranzport wireless controller.

Enable the MIDI input and output pair connected to the Tranzport Hardware in the MIDI Settings Tab.

Select "Frontier Design Group Tranzport" in the External Controllers Settings Tab.



With the Tranzport control surface selected, set the corresponding MIDI Input and Output ports in the Properties panel.



See Appendix A for a list of Tranzport controls and their associated Functions.

Chapter 8: Importing, Exporting, Freezing, And Rendering

Chapter Contents

8.1 : Importing And Exporting Projects
Importing Project And Edit Archives
Exporting Project And Edit Archives
8.2 : Exporting Audio
8.3 : Exporting MIDI
8.4 : Rendering Tracks And Freezing Tracks
Rendering Tracks
Freezing Tracks
8.5 : The Import Button Options
8.6 : The Export Button Options

8.1 : Importing And Exporting Projects

Importing Project And Edit Archives

Once an archive project is created, you can easily reopen it when needed.

To import an archive project or edit, simply:

- Switch to the projects page.
- Click the open project button located in the control section.
- You will be prompted for the path of your project or archive. Navigate to the project archive you wish to import, and select it.
- Tracktion will prompt you for a folder into which the archive should be unpacked. Select a suitable folder, and click OK. Tracktion will create a project folder in the selected folder to unpack the archive.

Once you have chosen the archive and a destination folder, Tracktion will create a project folder in the chosen directory, unpack the archive into it, and add the new project to the projects list.

If you wish to import the material contained in an archive into an existing project, you can instead:

- Switch to the projects page.
- Select the project to which the archived content will be added.
- In the properties panel, click the import material button, and select the unpack an archive and add it to this project option.
- You will be prompted for the path of your project or archive. Navigate to the project archive you wish to import, and select it.

The archive will be unpacked, and all edits and material contained in it will be added to the current project.

This later option can be especially useful if a number of band members are collaborating on a song remotely, as it provides an easy way to consolidate the various different versions into one project.

Exporting Project And Edit Archives

Tracktion can create project archives that bundle a project file, edit(s), and all related materials, into a single file or folder. Archives are convenient for backing up your important work, and for transferring projects between computers, or band members.

An edit archive is similar to a project archive, except that where a project archive will contain all of the edits in the project, and all related materials, an edit archive by contrast will contain only the current edit, and material required by that edit. Because edit archives are only focused on the current edit, there are a few more available options for excluding unnecessary files from the archive.

To export a project:

- Switch to the projects page.
- Select the project in the projects list.
- Click the **export project** button located in the properties panel (the export project dialogue is described below).

To export an edit:

- Switch to the projects page.
- Select the project that contains your chosen edit from the projects list.
- Select the edit item from the items list.
- Click the **export edit** button located in the properties panel (the export project dialogue is described below).

or, if the edit is already open:

- Switch to the edit page.
- Click the **export** button in the control section. This will display a pop-up menu.
- Select the **export an archive of this edit** option from the pop-up menu (the export project dialogue is described below).

Tip: Exporting can also be used to tidy up projects by casting off orphaned clips, and stripping audio files of unused sections.

When exporting projects or edits, you will see a window something like the one shown in Figure 8.1.1. Depending on whether you are exporting an edit or a project, a few options shown in the image below may not be present.

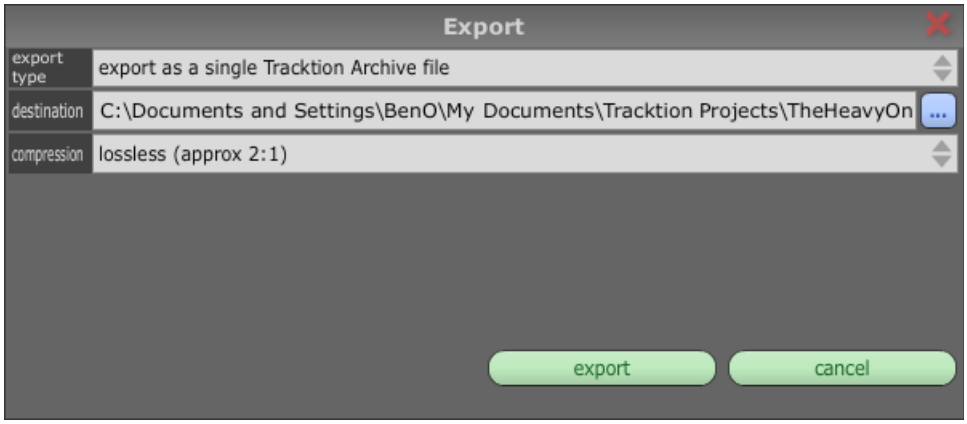


Figure 8.1.1

Export type: Tracktion can output an archive as a single file, or as a collection of files. Typically the single file option is the more portable and convenient method, but the the only way to access files inside the archive is to unpack the entire archive. If you believe you may often need to access audio clips, for example, that are contained in the archive, you may wish instead to choose to export as a collection of files.

- **Export as a single Tracktion Archive file:** Use this option to export the entire archive as a single file. This is generally the most convenient way to back-up projects, or move them to another computer.
- **Export as files in a directory:** This option copies all of the archive material into the destination directory, but does not pack it all into one file. When this option is selected, the **compression** option is not available.

Destination: Use this option to select the folder in which the export file(s) will be saved. Tracktion automatically chooses a suitable folder, so normally you don't need to change this.

Compression: (Only available when export type is set to single file.) This option allows you to create smaller archives by compressing audio contained in the archive.

- **No compression (1:1):** Select this option to have the audio exported without any compression. This option will produce the largest file size. You should probably instead choose the lossless 2:1 option.
- **Lossless (approx 2:1):** The audio in the archive will be compressed using the FLAC lossless encoder. This option provides the maximum audio quality whilst still producing significantly smaller archives than the "no compression" option.
- **High/Medium/Lowest quality:** When these options are selected, Tracktion will use a reductive, or lossy, encoding method on audio material, to reduce file size as far as possible. The encoding method used is Ogg Vorbis, which typically gives subjectively better results than MP3. These options are handy when collaborating across the Internet and absolute audio quality is not essential at all stages of the writing process.

When exporting an edit, additional items are available (Fig. 8.1.2).

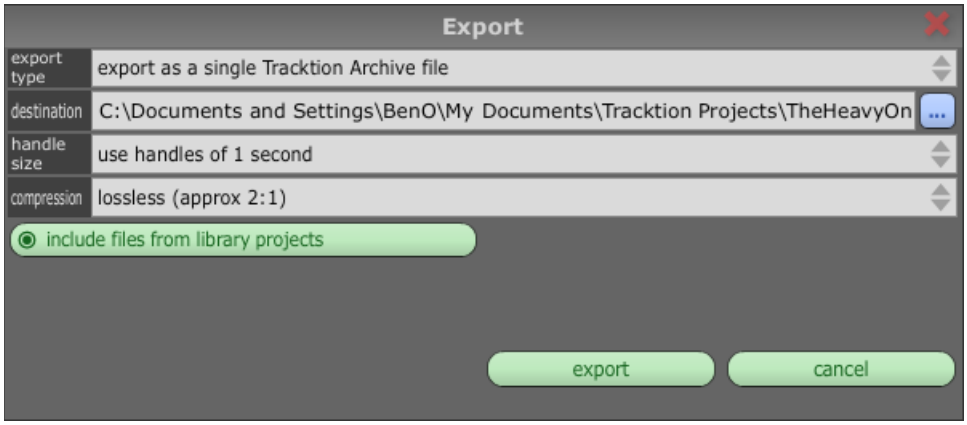


Figure 8.1.2

Handle size: This option allows you to control what happens to audio items that contain unused material.

If you have a vocal take that spans five bars, for example, but you only used the first two bars of it in the edit, Tracktion can trim the excess to reduce the archive file size. The audio file referenced by the project will not be altered, but the copy included in the archive will be trimmed according to the handle size setting:

- **Don't delete any unused audio:** When this option is selected, and the audio is exported in full. Use this if you believe you may later need currently unused audio material .
- **Export shortest possible media (no handles):** Select this option if you want Tracktion to completely discard unused audio in the archive. This will create the smallest possible file size, and is probably the best option for archiving completed work.
- **Use handles of n seconds:** These options allow you to retain the specified amount of surplus audio. For example, if a clip uses three seconds worth of material from the middle of a much longer audio file, selecting the "use handles of 1 second" option will cause five seconds (one + three + one) of the source material to be archived.

Include files from library projects: (Only available when exporting edits.) When this option is checked all files in the edit will be included in the archive. If you uncheck this option, any files also present in your library projects will be excluded from the archive. This can be useful if, say, you have common sample libraries on the computers that you typically share projects across. By placing the common samples in the library projects, you can have Tracktion reduce the archive size by not including redundant audio files.

8.2 : Exporting Audio

Before you can burn your music to CD or listen to it on your personal MP3 player, you need to export it.

To export an edit as an audio file:

- Open your edit for editing.
- From the edit page, click the **export** button in the control section. This will display a pop-up menu.
- From the pop-up menu, choose the **create an audio file...**, or the **create an mp3/ogg file** option.

At this point you will be looking a dialogue box similar to the one shown in Figure 8.2.1. The exact dialogue that you will see will differ slightly depending on whether you chose to export an audio file or an MP3/Ogg file.

Tip: Exporting audio files can be useful for creating loops that can be used in other projects. Large, complex, and computationally expensive percussive patterns, for example, can be exported into a single audio file. Not only is the audio file likely to be far more gentle on your computer's resources, it can sometimes be a useful creative tool to work with fixed loops.

Figure 8.2.1

File: The exported audio will be saved at the location specified here. Tracktion automatically selects a location inside your project folder and names it appropriately based on the edit and the number of exports you have made.

Format: From this option you can select the format of the resultant export file. The options available will be dependent on whether you chose to export an audio file or an MP3/Ogg file.

- **Audio:** You will have options of WAV, AIFF, FLAC, AV, CAF, VOC, and WAV64.
- **MP3/Ogg:** The choices offered here are MP3, and Ogg. Both of these formats are reductive compression types that sacrifice quality for file size. MP3 is the more widely used of the two, though Ogg is held by many to give a subjectively better sound.

Stereo: Select whether to export a mono, or stereo, audio file.

Sample rate: (Only available when exporting audio files) Select the sample rate of the file (for music destined for CD, use 44100).

Mode: (Only available when exporting MP3/Ogg files) Select whether the file should be encoded as variable bitrate, average bitrate, or constant bitrate. If in doubt, use the default setting of constant bitrate.

Sample size: (Only available when exporting audio files) Select the sample resolution of the exported audio file. If you are intending to burn this audio to a CD, use 16-bit. If you are exporting this audio for further editing, or to be used in other projects, you may want to instead export to 24 or 32-bit.

Bitrate: (Only available when exporting MP3/Ogg files) Select the bitrate at which the resultant file will be compressed . Higher values give better sounding results, but produce correspondingly larger files. 192 is generally a good compromise.

Remove silence at start/end: When this option is selected, Tracktion will trim silence from the beginning and end of the exported file(s).

Dithering enabled: When audio is changed from 24-bit or 32-bit down to 16-bit, some accuracy and detail is lost. Typically, this effect will be most noticeable in quiet sections of the music, such as reverb tails. Dithering is a technique that can be used to offset some of the quality loss, given subjectively better sounding audio files. Typically you would want to leave this option enabled, unless: you are using an alternate dithering filter on the master section of the edit; you are exporting the audio at 24-bit or higher; or you are planning to apply further processing to the audio.

Only render marked region: When this option is selected, Tracktion will export only the area between the in/out markers.

Only render selected tracks/clips: If one or more tracks or clips are selected, this option becomes available and Tracktion will export only the currently selected track(s) or clip(s).

Render each track to a separate file: (Only available when exporting audio files.) When this option is selected Tracktion will export a separate audio file for every track in the edit. This is useful if you wish to import your work into another sequencer. When this option is disabled, Tracktion simply creates one single audio file of the entire mix. If you wish to burn the edit to a CD, you should uncheck this option.

Render at 1x play-speed: Some 3rd party plug-ins get confused when made to process audio at a rate faster than normal play-speed. Whilst this option will greatly slow down renders, it may be worth trying if a plug-in produces unexpected results in the exported audio.

Add ID3/Vorbis info: (Only available when exporting MP3/Ogg files.) When this option is selected, information about your edit, such as the edit name is embedded in the resultant file. This information will be available to music players, and will typically be shown while the song is playing. When this option is enabled, an additional **edit** button will appear. This edit option gives you a chance to customise the embedded tags if desired (Fig.8.2.2).

Normalise: When this option is selected, Tracktion will automatically adjust the level of the exported audio to use the maximum available audio head-room. If you are exporting to 16-bit, you will probably always want this option enabled.

Adjust level based on RMS: This option works like the normalise option, but where normalise is calculated based on the peak audio level, this option scales the output based on its average level. Use this option with caution, since it may allow the result to clip.

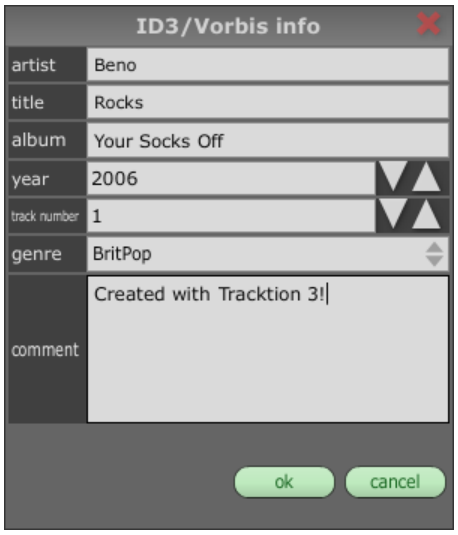


Figure 8.2.2

8.3 : Exporting MIDI

To an export an edit as a MIDI file:

- Open your edit for editing.
- With the edit open in the edit page, click the **export** button in the control section.
- From the displayed pop-up menu, choose the **export MIDI file...** option.

Note: When exporting MIDI for tracks that contain VSTis, be aware that any automation data on the track will be lost.

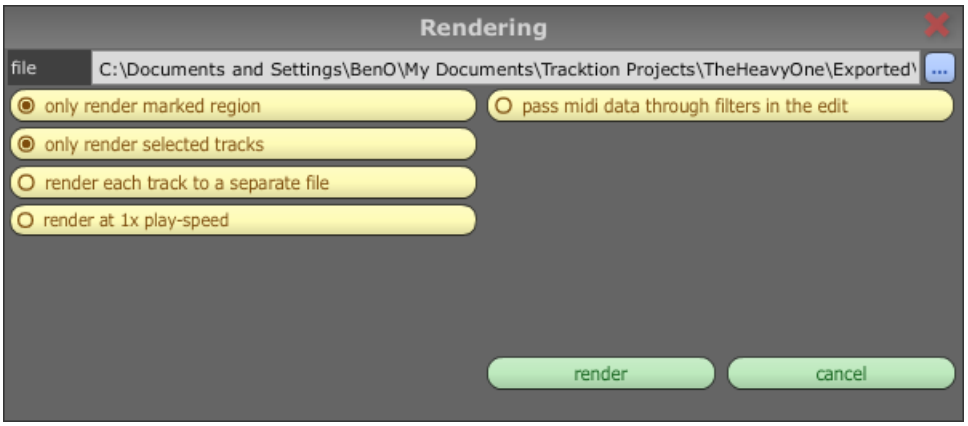


Figure 8.3.1

File: This option controls where the exported MIDI file will be saved. Tracktion automatically selects a location inside your project folder and names it appropriately based on the edit and the number of exports you have made.

Only render marked region: When this option is selected, Tracktion will export only the area between the loop markers.

Only render selected tracks/clips: If one or more tracks or clips are selected, this option becomes available and Tracktion will export only the currently selected track(s) or clip(s).

Pass MIDI through filters in the edit: Typically only MIDI data contained in MIDI clips will be exported. When this option is enabled, any MIDI generated or altered by filters in the edit, will also be included in the exported MIDI file. Note, many filters do not pass MIDI data though to their outputs. If you render a track with such a filter present, and this option active, the MIDI data will be blocked by the filter. Therefore, to avoid MIDI data being lost during exporting, you may generally wish to leave this option off.

Render each track to a separate file: When this option is selected Tracktion will export a separate MIDI file for every track in the edit. When this option is disabled, Tracktion simply creates one single MIDI file of the entire mix.

Render at 1x play-speed: Some 3rd party plug-ins get confused when made to process MIDI at faster than normal play-speed. Whilst this option will greatly slow down renders, it may be worth trying if a plug-in produces unexpected results in the exported MIDI.

8.4 : Rendering Tracks And Freezing Tracks

Rendering Tracks

Rendering a track is similar to exporting it in that it creates an audio file of the track contents. It is specifically designed to allow for fast bouncing of CPU intensive tracks to an audio file though, and this fact is reflected in the options available when rendering tracks.

To render a track:

- Select the track.
- Click the **render** button in the properties panel.
- From the pop-up menu, choose whether the rendered track should be stored in the project directory, or at an alternate location (typically you will want to choose the project directory as a destination).

Figure 8.4.1

File: (Only available if you chose to render to a specific location.) Select a destination path and name for the rendered audio file. Tracktion automatically selects a location inside your project folder and names it appropriately based on the edit and the number of exports you have made.

Sample rate: Select a sample rate for the rendered file. This should typically be matched to the sample rate you are using for the rest of the edit, or at least as a direct factor of it.

Sample size: You can select the bit depth of the rendered audio. Generally it is best to leave this at 32-bit, but 16-bits can be used to reduce the file size and load on the hard-drive when the file is streamed during playback.

Format: You can choose between WAV and AIFF formats. Typically WAV is the better choice as BWAV time stamps will be written to the file, making it easier to import and match the start time in other projects.

Bypass filters: When this option is selected, the resultant audio file will not have been processed by any filters on the track. Generally this option can be more flexibly replaced by simply disabling filters that you do not wish to have active on the rendered audio.

Replace rendered tracks: The tracks that were rendered will be replaced by the rendered results when this button is clicked.

Add rendered tracks: When this button is clicked, the rendered files will be added to the edit as new tracks. This allows you to mute out the original track, and use the rendered track to save computer resources. If you decide you want to make alterations to the source material, you can unmute the first track, edit it, and re-render it when ready. BY placing both source and rendered track in a folder, you can use this trick to extend your computer's resources without needing to have extra tracks cluttering up your edit.

Freezing Tracks

If you find that your edits require more processing power than your computer can provide, and upgrading is not an option, freezing may just be the the answer to your needs.

The freeze function works to free up CPU usage by bouncing frozen tracks into a single audio file. In many ways it is similar to rendering, but is typically easier to use, and can can be less demanding on hard drives.

To “freeze” a track:

- Select the track, or tracks you wish to freeze.
- Click the **freeze track** button in the properties panel.

Freezing causes Tracktion to render the selected track(s), along with their filters, down to a single temporary file on your hard-drive. A progress bar will be shown whilst the tracks are being frozen. After a few moments, the freeze operation will complete. The frozen tracks will be shown with their height at the smallest size. Any filters used by the tracks will be disabled (Fig. 8.4.2).

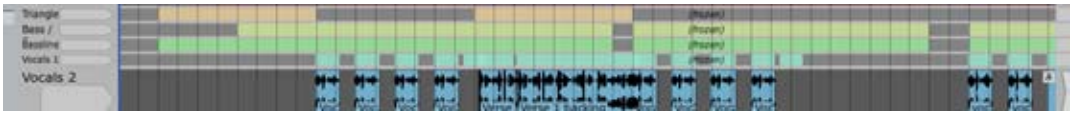


Figure 8.4.2

By combining all frozen tracks into one single file, Tracktion makes it possible to play as many tracks as you need. Even laptop computers, usually hindered by slower hard-drives than their desktop counterparts, will be able to handle the demands of large projects, making work on the road a real possibility.

There is a cost to this seemingly unlimited power though. Freezing and unfreezing tracks can take a long while, as the time taken to freeze or unfreeze will grow longer with every extra frozen track. It is also not possible to make any changes to a frozen track. Whether it be editing MIDI, audio, or changing the volume or pan settings, if you need to change some aspect of a track you will need to unfreeze it. Unfreezing tracks is simply a case of displaying the track properties as normal and clicking the **unfreeze** button. Once unfrozen, your tracks will return to normal size, with all filters and settings just as you left them.

Freeze can be very useful when making audio recordings in edits that already have lots of audio tracks. With these audio tracks already placing a high load on your hard-drive, recording takes may be spoilt by drop-outs. Freezing the existing audio tracks will help to ensure that the audio recordings are not marred by hard-drive performance issues.

When mixing projects that rely on freeze, you may be able to reduce time spent waiting for tracks to freeze and unfreeze by working on the mix in sections. For example, perhaps you can get away with freezing only the bass and percussion, leaving you free to mix the vocals and lead instruments. When you are ready to move on, you could simply unfreeze the edit, and freeze everything that will not be altered during the next mixing section.

If you find that you need to tweak levels and effects constantly on some tracks, you may want to consider using track rendering instead.

8.5 : The Import Button Options

The import button (Fig. 8.5.1) can be used to quickly add content to an open edit. It is generally faster to use the **quick find browser** to locate material, but the import button offers a few options that are not available to the quick find browser.

Figure 8.5.1

When the import button is clicked, a pop-up menu is displayed. This pop-up menu offers the following options:

Import an audio or MIDI file...: You can use this option to add material on your hard-drive, or a data CD, to the current edit. Files located on CDs or network drives are automatically copied into the project folder, whereas if the file is stored on a hard-drive, you will be prompted whether you wish to copy the file to to the project folder, or reference it from the current location.
Keyboard shortcut: A.

Import tracks from an audio CD...: Use this option to copy tracks from an audio CD into Tracktion. The imported tracks are saved as audio files in the project folder and added to the edit as standard audio clips. The CD import process is described below and is only available on a PC. Mac users should use the **Import an audio or MIDI file...** option to import tracks from a CD.

Import a mackie .prj project file: Users of the Mackie HDR, MDR, or SDR hard disk recorders can import their projects into Tracktion for editing and mixing. Working with the .prj files is covered in more detail in Section Five of this chapter.

When the **import tracks from an audio CD** option is selected, a dialogue-box like the one shown in Figure 8.5.2 will be displayed.

Figure 8.5.2

If an audio CD is inserted into the specified CD drive, the available audio tracks, along with some information about them, will be displayed. Clicking anywhere on the bar to the right of the the track name will begin previewing the CD track. The bar represents the time-line of the track, and the position that you click on the bar will set the point at which preview playback begins.

To the left of each track is a tick/cross icon. When a track is ticked, it will be included in the import. Tracks that are not ticked will not be imported. You can toggle whether a track is queued for recording by clicking the track name.

CD drive: Use this option to select the CD drive that you wish to import audio tracks from.

Select all: Use this option to queue all audio tracks for importing.

Select none: This button unticks all tracks, thus removing them from the import list.

Volume: Use this slider to adjust the preview level.

Stop: Stop preview playback.

Start recording: When this button is clicked, all queued tracks will be imported into Tracktion. They are automatically added to the project and imported audio folder.

8.6 : The Export Button Options

The export button (Fig. 8.6.1) provides options for exporting an edit, or sections of it, as audio or MIDI files. In addition, the export button allows you to export the edit as an archive for easy transferral to another machine, or to a backup archive.

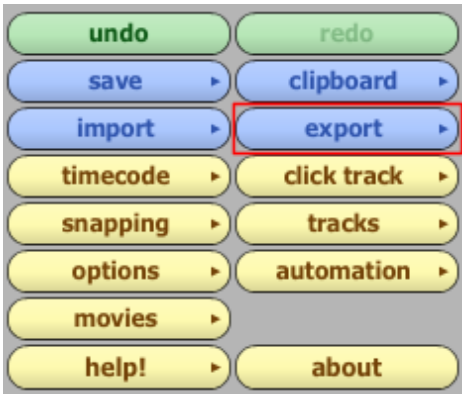


Figure 8.6.1

When the **export** button is clicked, a pop-up menu is shown. This pop-up menu contains the following options:

Create an audio file: This option allows you to export your edit, or specified sections/tracks, as an audio file. Exporting audio files is detailed in Section Two of this chapter.

Create an MP3/Ogg file: This option allows you to export your edit, or specified sections/tracks, as a compressed audio file. Tracktion can export audio using both MP3 and OGG “lossy” compression formats. If you want to export as MP3, you will need to download the LAME codec. If the codec is not installed on your computer, Tracktion will provide you with the option to download and install it. Exporting audio files is detailed in Section Two of this chapter.

Create a MIDI file: This option allows you to export your edit, or specified sections/tracks as a MIDI file. Exporting MIDI files is detailed in Section Three of this chapter.

Create an archive of this edit: You can export the current edit as a project archive. In essence this is the same as exporting an entire project, but the resultant archive will contain only the edit, and material relevant to it, rather than all edits and all associated materials. Generally speaking, edit archives make more sense when sharing work with collaborators, as they are likely to produce smaller, more portable, archive files. Export project and edit archives is discussed in Section One of this chapter.

Chapter 9: Rack Filters

Chapter Contents.

9.1 : What Are Rack Filters?
Track Spanning: Learning To Share
Building Blocks: A Modular World
9.2 : Working With Rack Filters
The Rack Filter Editor
9.3 : How To Build Rack Filters
Building A Rack By Hand
The Handy Wrap / Unwrap Tool — Using Racks As Channel Strips
9.4 : Racks, Tracks, Inputs, And Outputs
9.5 : Working With Multiple Output VSTis
The Track Spanning Approach
The Modular Approach

9.1 : What Are Rack Filters?

If you have so far been amazed at how intuitive and instantly obvious Tracktion is to use, rack filters may come as a bit of a shock. They aren't difficult to use as such, but it may not be immediately apparent how to use them; indeed you may not even be all that clear as to what they actually do. Don't worry, they really are easy to understand and use with a just little hands on demonstration.

You should by now be familiar with the **aux send** and **aux return** filters; if you have not already encountered these filters, it may be beneficial to go back and review the discussion on them in Chapter Six before reading further. Just like aux sends, racks can take audio from a number of tracks, and just like aux returns, racks can inject that audio into another track. In fact, at their core, the aux send and aux return filters are basically stripped down rack filters.

Rack filters have two defining characteristics; firstly they can span a number of tracks, and secondly they provide a modular surface upon which you can potentially create completely new effects and synthesizers.

Track Spanning: Learning To Share

So what does it mean to span tracks? It is probably easier to show this than to describe it, so let's do a quick experiment with racks. Add a new filter to track one of an empty edit, and when prompted for a filter to insert, open the folder called "Rack Filters," followed by the sub-folder "new from preset," and select the "Stereo Pass Thru" filter inside (Fig. 9.1.1). Next, repeat this process to add the "Stereo Pass Thru" rack to track two as well. Finally, lower the main output level for Tracktion to at least –6 dB. Really, this last step is worth it!

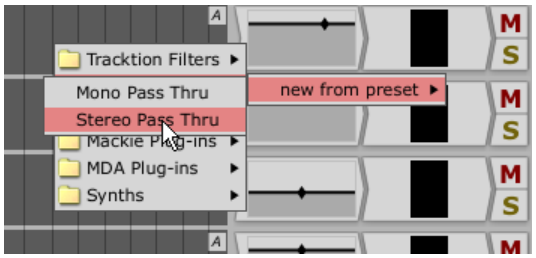


Figure 9.1.1

Load an audio file onto track one, or send it some audio from one of your input devices, and watch the level meters for both tracks one and two (Fig. 9.1.2). What is happening here is that rather than tracks one and two having their own copy of a filter, as would normally be the case, both tracks are actually sharing the same rack filter. Essentially this is the same thing that happens with the standard aux send and aux return filters, but racks let you take things a step or two further as shall see throughout the remainder of this chapter.

Figure 9.1.2

So why the need to lower the master volume? If you look at your master level you should see why. Despite the fact that you have dropped the master volume by 6 dB, the level meter will be showing the same level as the level meters on tracks one and two. Because both tracks are receiving exactly what was fed to the rack, with no attenuation anywhere, the level has effectively been doubled.

The thing to note here is that racks allow you to move audio from one track to another, and they do this by being in two places at once.

You may want to save this edit, as we will come back to it in a few pages time.

Building Blocks: A Modular World

Rack filters aren't just useful for moving audio around, they have another, wholly different, trick up their sleeve too.

What you have seen so far is the outside of a rack filter, and much like any of the other filters you have used inside Tracktion, what goes on inside them is largely unknown. One engaging aspect of real hardware is that you can, if you are so inclined, take the lid off and poke around at the stuff that makes it all work. That's not so easy to do with software, and most likely would be in violation of the software license anyway. Rack filters can't give you access to the low-level workings of filters, but if you do like to experiment a little, they offer a good compromise.

In short, rack filters allow you to take a group of filters and use them as building blocks to make more powerful filters. You could, for instance, layer a number of software instruments, to create powerful monster synthesisers. Maybe you've got some ideas for creating interesting stereo widening effects by processing the stereo channels in different ways. Or perhaps you just want to save a few of your favourite effects chains for use across projects. Either way, it's worth taking the lid of off rack filters and looking inside. We will look at how to do this over much of the remainder of this chapter.

9.2 : Working With Rack Filters

The Rack Filter Editor

To display the rack filter editor, click the racks button at the top-right-hand corner of the edit page, or press **CTRL** + **G** (**CMD** + **G** for Mac users). The arrange area will be reduced in size slightly and a rack editor strip (Fig. 9.2.1) will be shown below it.

If you look at Figure 9.2.1 you will notice three pins on either side of the rack canvas. These pins form the inputs (on the left-hand side), and the outputs (on the right-hand side) of the rack. The top-most input and output pins carry MIDI data. The two pins below carry the left and right channels of audio. You may remember from Chapter 4.3 that rack filters can be used to support filters with more than just one stereo output. This is because you can specify the number of input and output audio pins a rack offers. Note that racks can only support one MIDI input and output pin, however. We will look more closely at racks with multiple pins later in this chapter.

In addition you will notice a name tab to at the top-left of the rack editor, each rack in the edit will be shown as a tab here. Clicking the name tab will bring the corresponding rack to the fore.

Figure 9.2.1

New rack: This button displays a pop-up menu from which you can create a new rack filter.

- **Create new empty rack:** Select this option to creates a standard stereo in/out rack filter.
- **Load a preset rack:** Select this option to create a new rack filter and load the selected rack-preset into it. If no rack-presets have been saved, this option is unavailable.

Show one rack/two racks: Use this button to toggle between one large editor canvas and two smaller ones. Normally, you will only want to work with one rack at a time, but sometimes you might want to compare or copy/paste between two racks.

Clicking inside the rack filter editor will show the properties in the properties-panel (Fig. 9.2.2).

Figure 9.2.2

Name: Use this field to give the new rack filter a name. The name will be shown over the rack filter icon in the filter view, and used as the preset name if this rack filter is saved as a preset. It is a good idea to give racks descriptive names. Opening an edit that contains a number of cryptically named racks, after a few months have passed, is a misery you can happily avoid.

New input / output channel: Use these options to add new audio input or output pins to the rack. When you select one of these options you will be prompted for a name for the pin. It is a good idea to label left, right, and mono pins accordingly. Figure 9.2.3 shows an empty rack filter with two extra output pins.

Figure 9.2.3

Rename input/output channel: To rename a pin, click this, and select the pin from the pop-up list. You will then be prompted for a new name.

Delete input/output channel: To delete a pin, click this, and select the pin from the pop-up list.

Delete: This option deletes the rack from the edit. Use this with care, as any tracks that require this rack will be affected.

The next three buttons allow you to manage rack presets. These tools allow you to create racks that can be used in other projects, or distributed between your band members. Once a rack has been saved as a preset it will be available to all of your edits from the new filter icon. If you read, or followed the tutorial at the start of this chapter, you have already used as rack preset.

Load: This button displays a pop-up menu from which you can choose one of your rack presets to load into the current rack. Alternatively you can import a previously exported rack file.

If you choose to import a rack, you will be prompted for the location of the rack file. Note that importing racks does not automatically add them to the preset list. If you want to add the imported rack as a preset, you will also need to “save” it, as described next.

Save: This button displays a pop-up menu from which you can save the rack as a preset, or export it.

If you choose to exporting a preset, you will be prompted for a file name and destination path for the exported file. Once the rack has been exported, it can be imported by using the load button’s import option.

When saving a rack as a preset, you have the option to either save the rack as a new preset, or to select an existing rack preset and have the current rack overwrite it. This latter option is generally most useful if yopu are making changes to an existing rack preset. Note though that changes made to a rack preset will not affect any racks that were previously created from the preset.

Del: This button allows you to delete a rack preset. When clicked, it displays a pop-up menu showing the current list of rack presets. To delete the preset, simply select it from this list.

Racks that have not been saved as presets are still available from the new filter icon, but will not be available to other edits or projects.

Tip: You can use presets as a way to make copies of a rack. Depending on the nature of a rack filter, it may not be desirable to have it be shared across a number of tracks, but you may still want more than one instance of it. The solution is to save the rack as a preset, then **create new racks** from that preset. Once you are done, you can delete the preset to tidy up behind yourself.

9.3 : How To Build Rack Filters

Building A Rack By Hand

As an example of how rack filters are constructed, let's extend Tracktion's delay filter to a true stereo type.

To start off:

- Open the rack editor (keyboard shortcut **CTRL** + **G**, or **CMD** + **G** for Mac users).
- Click the **new rack** button, and select **new empty rack** from the pop-up menu.
- Enter **stereo delay** in the name field (Fig. 9.3.1).

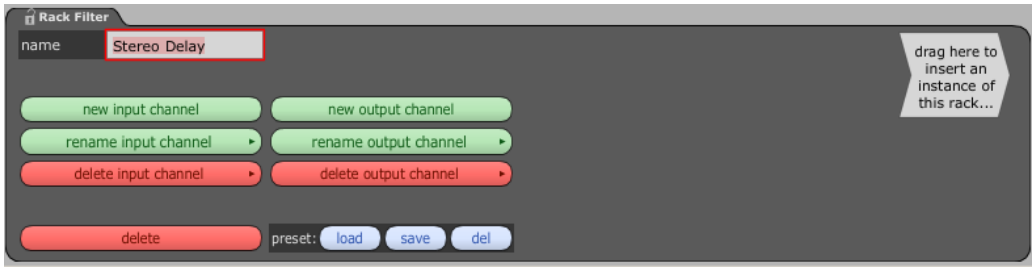


Figure 9.3.1

For this rack to do anything useful, we need to add some filters to it. Adding filters to racks can be performed in the same way that you would add filters to a track; drag the **new filter** draggable icon onto the rack editor canvas and drop it. Try it now, and when prompted for a filter to add, choose the Delay filter. When you drop the filter, Tracktion will ask you whether you want to auto-connect it; click the **no** button.

If all went well your rack should contain a single filter icon as shown in Figure 9.3.2. This filter will form one channel of our stereo delay. We now need to add a second delay which will act as the other channel, so following the same procedure as you used to add the first filter, add a second delay filter to the editor.

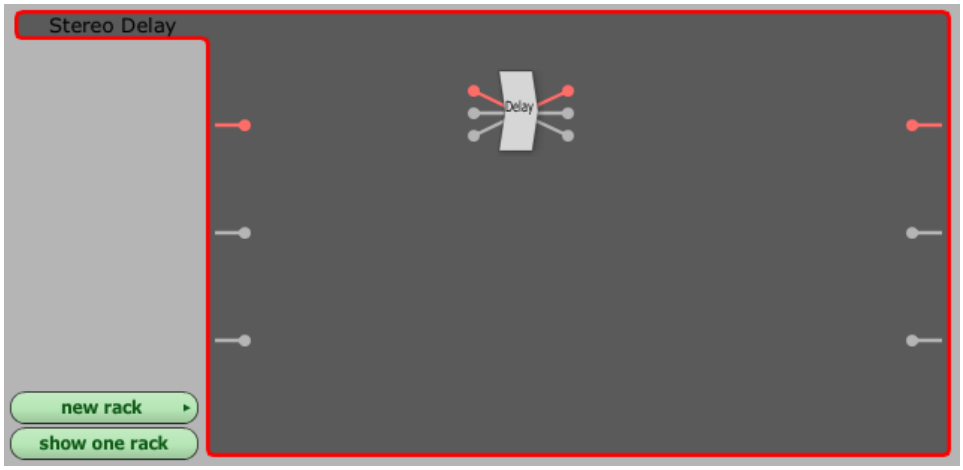


Figure 9.3.2

When building racks it is a good idea to try and place filters tidily and in logical positions, because while the location of the filter makes no difference to how the rack works, it does make it easier for you to see what is going on. Filters can be moved around inside the rack editor by clicking and dragging them to the desired destination. Try moving the two delay icons around until they form a vertical line roughly half way across the editor panel. This will make it easy to see how the stereo delay works.

The final thing you need to do is to make the connections that allow the filters to talk to the outside world. On the delay filter in Figure 9.3.2 you can see there are three pins on either side of the filter icon. Just like with rack itself, the top-most pins are the MIDI input/output pins, and the two lower pins are the left and right stereo channels. Making connections between pins is easy: just click on one of the pins and drag a line to the other. If you create a connection you do not want, you can remove it by simply clicking on the line and dragging it into an empty part of the rack canvas. Figure 9.3.3 shows the stereo delay correctly connected to the rack pins. Practise dragging the connections until you can comfortably create this circuit.

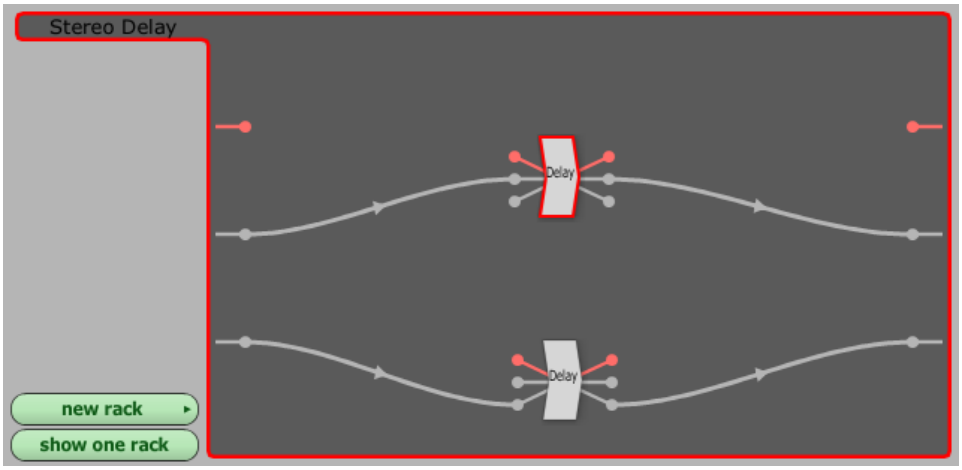


Figure 9.3.3

Note: The only way to wire pins is for right-pointing pins to be connected to left-pointing pins, and vice-versa. In addition, MIDI pins cannot be wired to audio pins. Feedback loops, where a rack feeds into another rack, that in turn feeds back into the first rack, should be avoided!

To create a true stereo delay effect, we need to set the right and left delay periods, so select the left channel delay, or top-most filter icon, and choose **1/2 beat** from the tempo menu (Fig. 9.3.4). Now select the other delay, and set the tempo to **1/4 beat**.

Figure 9.3.4

At this point you have a fully working stereo delay. Try adding this rack filter to a track, and you should hear the stereo delay effect. There is a lot more you could do with this rack to make it more interesting, but we'll come back to that at the end of this chapter.

The Handy Wrap / Unwrap Tool — Using Racks As Channel Strips

If you right-click on a filter in the filter section, you will see that the pop-up menu contains an option **wrap this filter in a rack filter**. This option can be used to create a new rack filter containing one or more filters contained on the current track. One handy feature of this method of creating racks is that all internal wiring is done automatically by Tracktion.

You can use this technique to create a channel strip of frequently used filters. Here's how you do it:

- Add the desired filters to a track.
- Set their ideal default values.
- Select them all by **CTRL** + clicking them one at a time (**CMD** + click for Mac users).
- Right-click on one of them and select **wrap these filters in a new rack filter** (Fig. 9.3.5).
- Ensure that the rack has a suitable name.
- Save the rack as a pre-set.

Now, whenever you wish to use these filters on a track, simply:

- Drag the new filter icon to your track.
- Select the rack from the list of rack pre-sets.
- Once the rack filter has been added to the track, right-click on it, and select replace rack with filters.

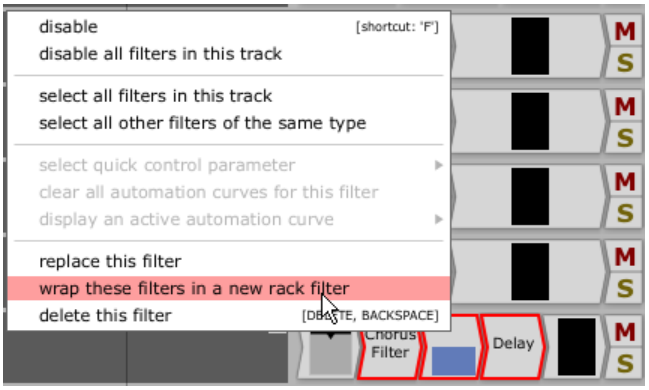


Figure 9.3.5

Your filters will be added to the track ready for use, exactly as they were when you wrapped them in the rack.

9.4 : Racks, Tracks, Inputs, And Outputs

Earlier parts of this chapter have referred to the possibility of racks featuring more than two input or output channels. Let's now look at how this works, and how you would use such a rack.

You may recall that in Tracktion all tracks are natively stereo in nature. Given this, how can a rack with more than two audio inputs receive any input on the extra inputs? To answer this question we need to look at the properties panel for a rack filter that has been placed in a track, such as that shown in Figure 9.4.1. The four options on the left-hand side of the image are where you select which of the rack's inputs and outputs to connect to the current track. Clicking on one of the values will display a pop-up similar to the one pictured below. The pop-up menu shows the choice of available inputs offered by the rack.

Figure 9.4.1

Because the track itself is a fixed stereo track, you can only connect the track to two of the rack's inputs and outputs at any one time. However, there are no restrictions on which pins you connect to. For example, there is no reason why you couldn't send both the left and right channels of a track to just input four on the rack.

Looking again at Figure 9.4.1, you can see that each of the track's input and output boxes has a corresponding level control. By adjusting these levels you can control how much of the track's audio is sent to each of the inputs, and how much of the rack's output is returned to the track. The link inputs buttons control whether the channels act as stereo pairs when adjusting the levels.

Above the level controls are two sliders: dry and wet. These function as standard wet / dry controls, setting how much dry signal is retained, and how much of the processed signal is returned. The wet control largely duplicates the functionality of the left / right output level controls, though it can sometimes be easier to use. The dry control, on the other hand, is very important for many common rack tasks.

To close this section, let's just look at what is involved in using a rack filter as an auxiliary send. If you still have the simple demo edit from section one of this chapter, open it up ready. If not, you may want to go back to section one and follow the steps for creating it.

Figure 9.4.2

Just like with the aux send and aux return filters, it is best to start by nominating a return track. In this example, we will call track two the return track, so when you have the edit ready, place a reverb filter after the rack filter on track two (Fig. 9.4.2). In addition to create a standard "post fade" send, you will need to place the rack filter on track one to the right of the volume/pan filter.

That's the return part taken care of, but since we don't have a special send filter, we need to adjust the track settings for the rack on track one. Just click on track one's rack filter and set the dry amount to 0 dB, and the wet amount to –INF (Fig. 9.4.3). In other words the exact opposite of their default states.

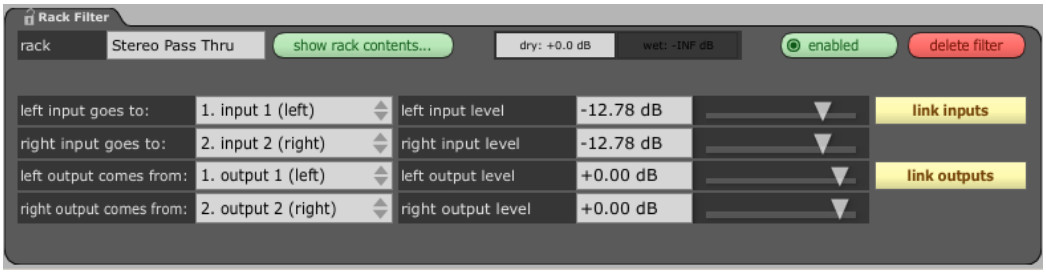


Figure 9.4.3

If you play the edit now, you should hear the reverb clearly over the audio on track one. To adjust the send level of track one simply lower the left and right input level values as shown above.

To create further sends, place a copy of this rack filter on the track, set the wet / dry values as shown in Figure 9.4.3 and set the left and right input level values to taste.

9.5 : Working With Multiple Output VSTis

The Track Spanning Approach

We looked briefly at multiple-output VSTis in Chapter Four, but let's take a closer look at how they work with racks. In addition, we'll look at an alternative approach to working with multiple-output VSTis.

The first method, as described in Chapter Four, uses the track spanning nature of rack filters to effectively place the VSTi on as many tracks as is needed.

To get started, add your VSTi to a track as normal. When the filter has been added to the track, right-click on it, and select the **wrap this filter in a rack option**. Tracktion will create a new rack filter that is named after your plug-in, and is ready wired. Figure 9.5.1 shows an example of what you may see.

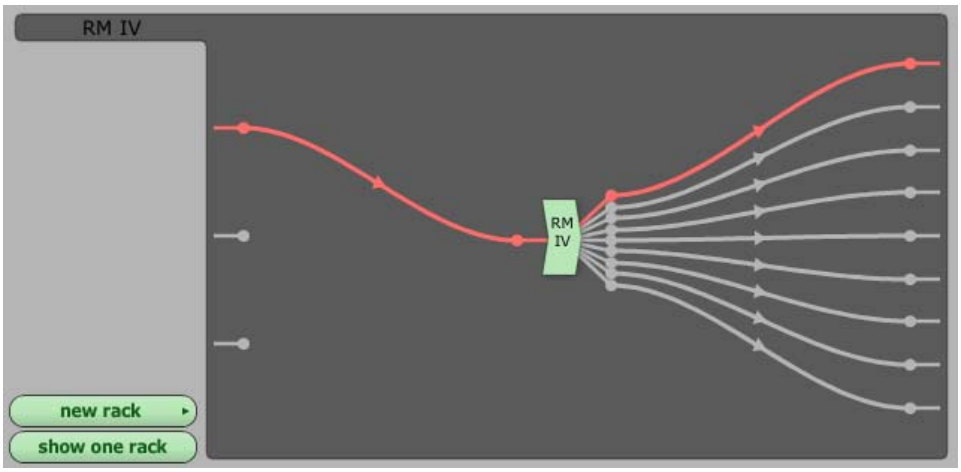


Figure 9.5.1

With your rack ready, you simply need to place copies of it on as many tracks as you have outputs. Keep in mind that if your VSTi has any mono outputs, they will need a track to themselves.

All that is needed now is to edit the rack properties for each track and choose the appropriate rack filter outputs in the "left/right output comes from" boxes, as described in the previous section.

Note that the rack will receive MIDI from every track that hosts it, so you can even spread the MIDI parts across tracks. This makes a lot of sense for mult-timbral VSTis, as the various channels on the VSTi will appear as normal tracks (Fig. 9.5.2).

Figure 9.5.2

The Modular Approach

If you would rather keep everything in one place then you can wrap the entire of the arrangement shown in Figure 9.5.2 in a single rack. This allows you to use only one track, but keep the flexibility offered by spreading the VSTi across a number of tracks.

To get started, create a new rack filter, and name it after your VSTi. Drag the “new filter” icon onto the rack canvas, and select your VSTi from the filter list. You will be asked if you want Tracktion to auto-connect the filter. Answer “no” to this question.

Once you have you VSTi in place you can begin introducing and connecting the various filters needed to create a complete sub-mix inside the rack (Fig. 9.5.3).

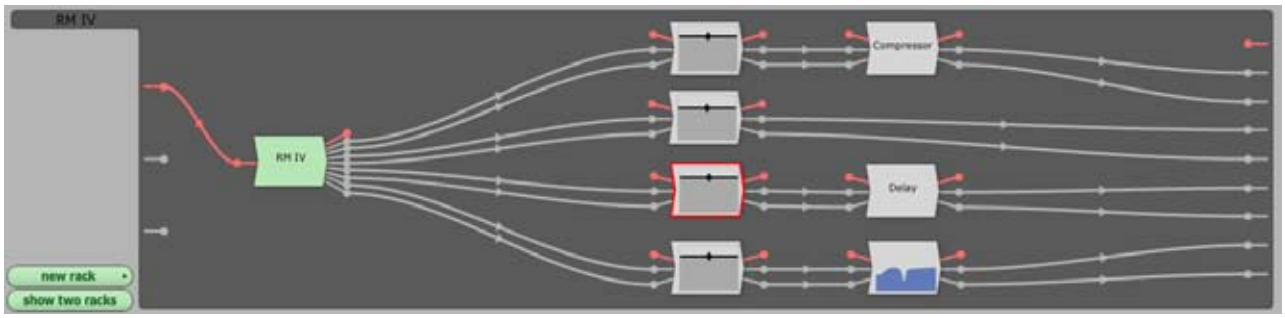


Figure 9.5.3

Although it may not look like it at first, this is the entire filter section of Figure 9.5.2 contained in one rack. One big advantage of this approach is that this rack can be saved as a pre-set, and recalled with just a few mouse clicks for use in other projects.

Final Words, And Some Useful On-Line Resources

Much as we’ve tried to ensure this manual is as clear and complete as possible, we know there will sometimes be things that don’t make sense, or aren’t completely applicable to your specific circumstances. Fortunately, many great resources can be found on-line. These resources range from general recording and mixing guides and forums, to Tracktion specific communities and support groups.

Two Tracktion related forums that merit particular mention are:

The Tracktion Support forum:
http://www.tracktion.com/forum

The Raw Material Software forum, which provides support for all Raw Material Software products, but is also home to a large, and friendly Tracktion user group:
http://www.kvraudio.com/forum/viewforum.php?f=22

In addition, you will also find links to countless free and commercial software instruments and effects throughout the KvR Audio site:
http://www.kvraudio.com

This concludes the Tracktion Reference Manual. All then that is left to say at this point is that we hope you enjoy using Tracktion as much as we enjoyed creating it.

Appendix A: Tranzport Button-Function Mapping

Button	Function	Shifted Function
REW	Rewind	Go to start
FFWD	Fast Forward	Go to end
STOP	Stop	Toggle E-to-E
PLAY	Play	Toggle automation read
RECORD	Record	Toggle automation write
<TRACK	Previous Track	Save
TRACK>	Next Track	Toggle Snap
REC	Arm Track	Arm/Unarm all Tracks
MUTE	Mute Track	Clear all mutes
SOLO	Solo Track	Clear all solos
IN	Go to In	Set In
OUT	Go to Out	Set Out
PUNCH	Toggle Punch	Toggle click
LOOP	Toggle Loop	Toggle Level/Pan
PREV	Previous Marker	Zoom In
ADD	Add Marker	Zoom to Fit
NEXT	Next Marker	Zoom Out
UNDO	Undo	Redo
DATAWHEEL	Scroll	Level/Pan
FOOTSWITCH	Record	

www.tracktion.com